

# Package ‘cplexAPI’

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**Type** Package

**Title** R Interface to C API of IBM ILOG CPLEX

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**Depends** R (>= 2.6.0)

**Imports** methods

**Description** This is the R Interface to the C API of IBM ILOG CPLEX. It necessarily depends on IBM ILOG CPLEX (>= 12.1).

**SystemRequirements** IBM ILOG CPLEX (>= 12.1)

**License** GPL-3 | file LICENSE

**LazyLoad** yes

**Collate** generics.R cplexConst.R cplexErrorClass.R cplexPtrClass.R  
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cplexAPI-package      *R Interface to C API of IBM ILOG CPLEX*

---

## Description

A low level interface to IBM ILOG CPLEX.

## Details

The package cplexAPI provides access to the callable library of IBM ILOG CPLEX from within R.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

## Examples

```
# load package
library(cplexAPI)

# Open a CPLEX environment
env <- openEnvCPLEX()

# Create a problem object
prob <- initProbCPLEX(env)

# Assign a name to the problem object
chgProbNameCPLEX(env, prob, "sample")

# Prepare data structures for the problem object
# Number of columns and rows
```

```
nc <- 3
nr <- 3

# Objective function
obj <- c(5, 4, 3)

# Right hand side
rhs <- c(5, 11, 8)

# Sense of the right hand side
sense <- rep("L", 3)

# Variable lower bounds
lb <- rep(0, 3)

# Variable upper bounds
ub <- rep(CPX_INFBOUND, 3)

# Column and row names
cn <- c("x1", "x2", "x3")
rn <- c("q1", "q2", "q3")

# The constraint matrix is passed in column major order format
# Be careful here: all indices start with 0! Begin indices of rows
beg <- c(0, 3, 6)

# Number of non-zero elements per row
cnt <- rep(3, 3)

# Column indices
ind <- c(0, 1, 2, 0, 1, 2, 0, 1, 2)

# Non-zero elements
val <- c(2, 4, 3, 3, 1, 4, 1, 2, 2)

# Load problem data
copyLpwNamesCPLEX(env, prob, nc, nr, CPX_MAX, obj, rhs, sense,
                  beg, cnt, ind, val, lb, ub, NULL, cn, rn)

# Solve the problem using the simplex algorithm
lpoptCPLEX(env, prob)

# Retrieve solution after optimization
solutionCPLEX(env, prob)

# Free memory, allacated to the problem object
delProbCPLEX(env, prob)
closeEnvCPLEX(env)
```

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXaddcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
addColsCPLEX(env, lp, ncols, nnz, objf, matbeg, matind, matval,  
             lb = NULL, ub = NULL, cnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of columns.
nnz	Number of nonzero constraint coefficients.
objf	Objective function coefficients.
matbeg	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Lower bounds of the new variables.
ub	Upper bounds of the new variables.
cnames	Names of the new variables.

**Details**

Interface to the C function `addCols` which calls the CPLEX function `CPXaddcols`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[checkAddColsCPLEX](#), [addRowsCPLEX](#)

---

addFpDestCPLEX	<i>Add a File to the List of Message Destinations for a Channel</i>
----------------	---

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXaddfpdest. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXaddfpdest has been removed.

**Usage**

```
addFpDestCPLEX(env, newch, cpfile)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
newch	Pointer to an IBM ILOG CPLEX channel as returned by <a href="#">addChannelCPLEX</a> .
cpfile	Pointer to an IBM ILOG CPLEX file as returned by <a href="#">openFileCPLEX</a> .

**Details**

Interface to the C function addFpDest which calls the CPLEX function CPXaddfpdest.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

**See Also**

[delFpDestCPLEX](#)

---

addIndConstrCPLEX      *Adds an Indicator Constraint to the Specified CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXaddindconstr. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
addIndConstrCPLEX(env, lp, indvar, complemented,
                  nzcnt, rhs, sense, linind, linval, indname = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
indvar	The binary variable that acts as the indicator for this constraint.
complemented	A Boolean value that specifies whether the indicator variable is complemented.
nzcnt	An integer that specifies the number of nonzero coefficients in the linear portion of the indicator constraint.
rhs	The righthand side value for the linear portion of the indicator constraint.
sense	The sense of the linear portion of the indicator constraint.
linind	A vector that with <code>linval</code> defines the linear portion of the indicator constraint.
linval	A vector that with <code>linind</code> defines the linear portion of the indicator constraint.
indname	The name of the constraint to be added (optional).

### Details

Interface to the C function `addIndConstr` which calls the CPLEX function `CPXaddindconstr`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

addMIPstartsCPLEX      *Add Multiple MIP Starts to a CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXaddmipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
addMIPstartsCPLEX(env, lp, mcnt, nzcnt, beg, varindices,
                  values, effortlevel, mipstartname = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
mcnt	Number of MIP starts to be added.
nzcnt	Number of variable values to be added.
beg	Array of length mcnt used with varindices and values. Consult the IBM ILOG CPLEX documentation for more detailed information.
varindices	Array of length nzcnt containing the numeric indices of the columns corresponding to the variables which are assigned starting values. Consult the IBM ILOG CPLEX documentation for more detailed information.
values	Array of length nzcnt containing the values to use for the MIP starts. Consult the IBM ILOG CPLEX documentation for more detailed information.
effortlevel	Array of length mcnt. Consult the IBM ILOG CPLEX documentation for more detailed information.
mipstartname	Names of the MIP starts.

### Details

Interface to the C function addMIPstarts which calls the CPLEX function CPXaddmipstarts.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

addQConstrCPLEX	<i>Add Quadratic Constraint to a Specified CPLEX Problem Object</i>
-----------------	---

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## Description

Low level interface function to the IBM ILOG CPLEX function CPXaddqconstr. Consult the IBM ILOG CPLEX documentation for more detailed information.

## Usage

```
addQConstrCPLEX(env, lp, lzn, qzn, rhs, sense,
                lind = NULL, lval = NULL,
                qrow, qcol, qval, qname = NULL)
```

## Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
lzn	Number of nonzero constraint coefficients in the linear part of the constraint.
qzn	Number of nonzero constraint coefficients in the quadratic part of the constraint.
rhs	Righthand side term.
sense	The sense of the constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
lind	Linear part of the quadratic constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
lval	Linear part of the constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
qrow	Quadratic part of the quadratic constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
qcol	Quadratic part of the quadratic constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
qval	Quadratic part of the quadratic constraint to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
qname	Name of the constraint to be added.

## Details

Interface to the C function addQConstr which calls the CPLEX function CPXaddqconstr.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

 addRowsCPLEX

---

*Add Constraints to a Specified CPLEX Problem Object*


---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXaddrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
addRowsCPLEX(env, lp, ncols, nrows, nnz, matbeg, matind, matval,
             rhs = NULL, sense = NULL,
             cnames = NULL, rnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of new columns in the constraints being added to the constraint matrix.
nrows	Number of rows.
nnz	Number of nonzero constraint coefficients.
matbeg	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
rhs	Righthand side term for each constraint to be added.
sense	Sense of each constraint to be added.
cnames	Names of the new columns.
rnames	Names of the new rows.

**Details**

Interface to the C function `addCols` which calls the CPLEX function `CPXaddcols`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[checkAddRowsCPLEX](#), [addColsCPLEX](#), [copyLpCPLEX](#), [chgRngValCPLEX](#)

---

baroptCPLEX

*Solve LP, QP or QCP Problem by Means of the Barrier Algorithm*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXbaropt`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
baroptCPLEX(env, lp)
```

**Arguments**

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `baropt` which calls the CPLEX function `CPXbaropt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[solnInfoCPLEX](#), [getStatCPLEX](#), [solutionCPLEX](#)

---

baseWriteCPLEX	<i>Write the Most Current Basis Associated With a CPLEX Problem Object to a File</i>
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---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXmbasewrite`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
baseWriteCPLEX(env, lp, fname)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	A filename.

**Details**

Interface to the C function `baseWrite` which calls the CPLEX function `CPXmbasewrite`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

basicPresolveCPLEX      *Perform Bound Strengthening and Detect Redundant Rows*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXbasicpresolve. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
basicPresolveCPLEX(env, lp)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function basicPresolve which calls the CPLEX function CPXbasicpresolve.

**Value**

If successful, a list will be returned:

redlb	strengthened lower bounds
redub	strengthened upper bounds
rstat	status of the row

Otherwise an object of class "[cplexError](#)".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

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boundSaCplex	<i>Access Upper and Lower Sensitivity Ranges for Lower and Upper Variable Bounds</i>
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---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXboundsa. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
boundSaCplex(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCplex</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCplex</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Beginning of the range of ranges to be returned.
end	End of the range of ranges to be returned.

**Details**

Interface to the C function boundSa which calls the CPLEX function CPXboundsa.

**Value**

If successful, a list will be returned:

lblower	lower bound lower range values
lbupper	lower bound upper range values
ublower	upper bound lower range values
ubupper	upper bound upper range values

Otherwise an object of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

checkAddColsCPLEX      *Validate Arguments of the Corresponding addColsCPLEX Routine*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcheckaddcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
checkAddColsCPLEX(env, lp, ncols, nnz, objf, matbeg, matind, matval,
                  lb = NULL, ub = NULL, cnames = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of columns.
nnz	Number of nonzero constraint coefficients.
objf	Objective function coefficients.
matbeg	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that specifies the nonzero elements of the columns being added. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Lower bounds of the new variables.
ub	Upper bounds of the new variables.
cnames	Names of the new variables.

### Details

Interface to the C function `checkAddCols` which calls the CPLEX function `CPXcheckaddcols`.

### Value

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[addColsCPLEX](#)

---

checkAddRowsCPLEX      *Validate Arguments of the Corresponding addRowsCPLEX Routine*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcheckaddrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
checkAddRowsCPLEX(env, lp, ncols, nrows, nnz, matbeg, matind, matval,
                  rhs = NULL, sense = NULL,
                  cnames = NULL, rnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of new columns in the constraints being added to the constraint matrix.
nrows	Number of rows.
nnz	Number of nonzero constraint coefficients.
matbeg	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	An array used with rmatind and rmatval to define the rows to be added. Consult the IBM ILOG CPLEX documentation for more detailed information.
rhs	Righthand side term for each constraint to be added.
sense	Sense of each constraint to be added.
cnames	Names of the new columns.
rnames	Names of the new rows.

**Details**

Interface to the C function checkAddRows which calls the CPLEX function CPXcheckaddrows.

**Value**

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[addRowsCPLEX](#)

---

checkChgCoefListCPLEX *Validate Arguments of the Corresponding chgCoefListCPLEX Routine*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcheckchgcoeflist. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
checkChgCoefListCPLEX(env, lp, nnz, ia, ja, ra)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nnz	Number of nonzero constraint coefficients.
ia	Row indices of the nonzero elements.
ja	Column indices of the nonzero elements.
ra	Nonzero elements.

**Details**

Interface to the C function checkChgCoefList which calls the CPLEX function CPXcheckchgcoeflist.

**Value**

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[chgCoefListCPLEX](#)

---

checkCopyColTypeCPLEX *Validate Arguments of the Corresponding copyColTypeCPLEX Routine*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcheckcopyctype. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
checkCopyColTypeCPLEX(env, lp, xtype)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
xctype	A vector containing the type of each column in the constraint matrix.

**Details**

Interface to the C function checkCopyColType which calls the CPLEX function CPXcheckcopyctype.

**Value**

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[copyColTypeCPLEX](#)

---

checkCopyLpCPLEX	<i>Validate Arguments of the Corresponding copyLpCPLEX Routine</i>
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---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcheckcopylp. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
checkCopyLpCPLEX(env, lp, nCols, nRows, lmdir, objf, rhs, sense,
                 matbeg, matcnt, matind, matval, lb, ub, rngval = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nCols	Number of columns in the constraint matrix.
nRows	Number of rows in the constraint matrix.
lmdir	Single integer value that specifies whether the problem is a minimization or maximization problem.
objf	The objective function coefficients.
rhs	The righthand side values for each constraint in the constraint matrix.
sense	The sense of each constraint in the constraint matrix.
matbeg	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matcnt	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Containing the lower bound on each of the variables.
ub	Containing the lower bound on each of the variables.
rngval	Containing the range value of each ranged constraint.

**Details**

Interface to the C function checkCopyLp which calls the CPLEX function CPXcheckcopylp.

**Value**

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[copyLpCPLEX](#)

---

checkCopyLpwNamesCPLEX

*Validate Arguments of the Corresponding copyLpwNamesCPLEX Routine*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcheckcopylpwnames. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
checkCopyLpwNamesCPLEX(env, lp, nCols, nRows, lpdire, objf, rhs, sense,
                        matbeg, matcnt, matind, matval, lb, ub,
                        rngval = NULL, cnames = NULL, rnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nCols	Number of columns in the constraint matrix.
nRows	Number of rows in the constraint matrix.
lpdire	Single integer value that specifies whether the problem is a minimization or maximization problem.

objf	The objective function coefficients.
rhs	The righthand side values for each constraint in the constraint matrix.
sense	The sense of each constraint in the constraint matrix.
matbeg	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matcnt	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Containing the lower bound on each of the variables.
ub	Containing the lower bound on each of the variables.
rngval	Containing the range value of each ranged constraint.
cnames	Names of the matrix columns or, equivalently, the variable names.
rnames	Names of the matrix rows or, equivalently, the constraint names.

**Details**

Interface to the C function `checkCopyLpwNames` which calls the CPLEX function `CPXcheckcopylpwnames`.

**Value**

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[copyLpwNamesCPLEX](#)

---

checkCopyQPsepCPLEX     *Validate Arguments of the Corresponding copyQPsepCPLEX Routine*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcheckcopyqpsep. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
checkCopyQPsepCPLEX(env, lp, qsepvec)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
qsepvec	A vector containing the quadratic coefficients.

### Details

Interface to the C function checkCopyQPsep which calls the CPLEX function CPXcheckcopyqpsep.

### Value

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[copyQPsepCPLEX](#)

---

checkCopyQuadCPLEX	<i>Validate Arguments of the Corresponding checkCopyQuadCPLEX Routine</i>
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### Description

Low level interface function to the IBM ILOG CPLEX function CPXcheckcopyquad. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
checkCopyQuadCPLEX(env, lp, qmatbeg, qmatcnt, qmatind, qmatval)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
qmatbeg	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
qmatcnt	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
qmatind	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
qmatval	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Details

Interface to the C function `checkCopyQuad` which calls the CPLEX function `CPXcheckcopyquad`.

### Value

Nonzero if it detects an error in the data; it returns zero if it does not detect any data errors.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[copyQuadCPLEX](#)

---

checkValsCPLEX	<i>Check an Array of Indices and a Corresponding Array of Values for Input Errors</i>
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---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcheckvals. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
checkValsCPLEX(env, lp, nval, rind = NULL, cind = NULL, val = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nval	Number of values to be examined.
rind	Row indices.
cind	Column indices.
val	The values itself.

### Details

Interface to the C function `checkVals` which calls the CPLEX function `CPXcheckvals`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`chgBndsCPLEX`*Change the Lower or Upper Bounds on a Set of Variables of a Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgbd. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgBndsCPLEX(env, lp, ncols, ind, lu, bd)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>ncols</code>	Number of bounds to be changed.
<code>ind</code>	Indices of bounds to be changed.
<code>lu</code>	A character vector, specifying whether an entry in <code>bd</code> is a upper or a lower bound on variable <code>ind[j]</code> .
<code>bd</code>	Values of the lower or upper bounds of the variables present in <code>ind</code> .

**Details**

Interface to the C function `chgBnds` which calls the CPLEX function `CPXchgbd`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[getLowerBndsCPLEX](#), [getUpperBndsCPLEX](#)

---

chgCoefCPLEX	<i>Change a Single Coefficient in the Constraint Matrix, Linear Objective Coefficients, Righthand Side, or Ranges of a CPLEX Problem Object</i>
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---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgcoef. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgCoefCPLEX(env, lp, i, j, val)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
i	An integer that specifies the numeric index of the row in which the coefficient is located. The linear objective row is referenced with $i = -1$ .
j	An integer that specifies the numeric index of the column in which the coefficient is located. The RHS column is referenced with $j = -1$ . The range value column is referenced with $j = -2$ . If $j = -2$ is specified and row $i$ is not a ranged row, an error status is returned.
val	The new value for the coefficient being changed.

**Details**

Interface to the C function `chgCoef` which calls the CPLEX function `CPXchgcoef`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[getNumRowsCPLEX](#), [getNumColsCPLEX](#), [chgObjCPLEX](#), [chgRhsCPLEX](#), [chgRngValCPLEX](#)

---

`chgCoefListCPLEX`*Change a List of Matrix Coefficients of a CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXchgcoeflist`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgCoefListCPLEX(env, lp, nnz, ia, ja, ra)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>nnz</code>	Number of nonzero constraint coefficients.
<code>ia</code>	Row indices of the nonzero elements.
<code>ja</code>	Column indices of the nonzero elements.
<code>ra</code>	Nonzero elements.

**Details**

Interface to the C function `chgcoeflist` which calls the CPLEX function `CPXchgcoeflist`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgColNameCPLEX      *Change the Names of Variables in a CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXchgcolname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
chgColNameCPLEX(env, lp, nnames, ind, names)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nnames	A vector that specifies the total number of variable names to be changed.
ind	A vector containing the numeric indices indices of the variables for which the names are to be changed.
names	A vector containing the strings of the new variable names for the columns specified in ind.

### Details

Interface to the C function chgColName which calls the CPLEX function CPXchgcolname.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

chgColsBndsCPLEX      *Change Lower and Upper Bounds on a Set of Variables of a Problem*

---

### Description

Set lower and upper bounds on a set of variables in one step. If  $lb[i] == ub[i]$  the type of the bound is set to "B", otherwise  $lb[i]$  is set to "L" and  $ub[i]$  is set to "U".

### Usage

```
chgColsBndsCPLEX(env, lp, j, lb, ub)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
j	An integer that specifies the numeric index of the column in which the coefficient is located.
lb	A vector containing the lower bounds.
ub	A vector containing the upper bounds.

### Details

Interface to the C function `chgColsBnds` which calls the CPLEX function `CPXchgbds`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

`chgBndsCPLEX`, `tightenBndsCPLEX`

---

chgColTypeCPLEX      *Change Types of a Set of Variables of a CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgctype. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgColTypeCPLEX(env, lp, ncols, ind, xtype)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of bounds to be changed.
ind	Indices of bounds to be changed.
xctype	A vector containing characters that represent the new types for the columns specified in indices.

**Details**

Interface to the C function chgColType which calls the CPLEX function CPXchgctype.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgMIPstartsCPLEX      *Modify or Extend Multiple MIP Starts*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXchg mipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
chgMIPstartsCPLEX(env, lp, mcnt, mipstartindices, nzcnt,
                  beg, varindices, values, effortlevel)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
mcnt	Number of MIP starts to be changed.
mipstartindices	Array of length mcnt containing the numeric indices of the MIP starts to be changed.
nzcnt	Number of entries to be changed.
beg	Array of length mcnt used with varindices and values. Consult the IBM ILOG CPLEX documentation for more detailed information.
varindices	Array of length nzcnt containing the numeric indices of the columns corresponding to the variables which are assigned starting values. Consult the IBM ILOG CPLEX documentation for more detailed information.
values	Array of length nzcnt containing the values to use for the MIP starts. Consult the IBM ILOG CPLEX documentation for more detailed information.
effortlevel	Array of length mcnt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Details

Interface to the C function chgMIPstarts which calls the CPLEX function CPXchg mipstarts.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgNameCPLEX	<i>Change the Name of a Constraint a Variable in a CPLEX Problem Object.</i>
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---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgname. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgNameCPLEX(env, lp, key, ij, name)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
key	A character to specify whether a row name or a column name should be changed.
ij	An integer that specifies the numeric index of the column or row whose name is to be changed.
name	A pointer to a character string containing the new name.

**Details**

Interface to the C function chgName which calls the CPLEX function CPXchgname.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`chgObjCPLEX`*Change Linear Objective Coefficients*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgobj. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgObjCPLEX(env, lp, ncols, ind, val)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>ncols</code>	Number of bounds to be changed.
<code>ind</code>	Indices of bounds to be changed.
<code>val</code>	A vector containing the new values of the objective coefficients of the variables specified in <code>ind</code> .

**Details**

Interface to the C function `chgObj` which calls the CPLEX function `CPXchgobj`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgProbNameCPLEX	<i>Change the Name of the Current Problem.</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXchgprobname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
chgProbNameCPLEX(env, lp, probname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
probname	The new name of the problem.

### Details

Interface to the C function `chgProbName` which calls the CPLEX function `CPXchgprobname`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgProbTypeCPLEX      *Change the Current Problem to a Related Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgprobtype. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgProbTypeCPLEX(env, lp, ptype)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ptype	A single integer value specifying the problem type.

**Details**

Interface to the C function chgProbType which calls the CPLEX function CPXchgprobtype.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[getProbTypeCPLEX](#), [cplexConstants](#) section "Problem Types".

---

chgQPcoefCPLEX	<i>Change a Single Coefficient in the Quadratic Objective of a Quadratic Problem</i>
----------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgqpcoef. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgQPcoefCPLEX(env, lp, i, j, val)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
i	The first variable number.
j	The second variable number.
val	The new coefficient value.

**Details**

Interface to the C function chgQPcoef which calls the CPLEX function CPXchgqpcoef.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

**See Also**

[chgCoefCPLEX](#)

---

`chgRhsCPLEX`*Change Righthand Side Coefficients*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgrhs. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgRhsCPLEX(env, lp, nrows, ind, val)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>nrows</code>	Number of bounds to be changed.
<code>ind</code>	Indices of bounds to be changed.
<code>val</code>	A vector containing the new values of the objective coefficients of the variables specified in <code>ind</code> .

**Details**

Interface to the C function `chgRhs` which calls the CPLEX function `CPXchgrhs`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgRngValCPLEX            *Change Range Coefficients*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgrngval. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgRngValCPLEX(env, lp, nrows, ind, val)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nrows	Number of bounds to be changed.
ind	Indices of bounds to be changed.
val	A vector containing the new values of the objective coefficients of the variables specified in ind.

**Details**

Interface to the C function chgRngVal which calls the CPLEX function CPXchgrngval.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgRowNameCPLEX      *Change Names of Linear Constraints*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXchgrowname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
chgRowNameCPLEX(env, lp, nnames, ind, names)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nnames	A vector that specifies the total number of variable names to be changed.
ind	A vector containing the numeric indices indices of the variables for which the names are to be changed.
names	A vector containing the strings of the new variable names for the columns specified in ind.

### Details

Interface to the C function chgRowName which calls the CPLEX function CPXchgrowname.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

`chgSenseCPLEX`*Change Sense of a Set of Linear Constraints*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgsense. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
chgSenseCPLEX(env, lp, nrows, ind, sense)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>nrows</code>	Number of bounds to be changed.
<code>ind</code>	Indices of bounds to be changed.
<code>sense</code>	A vector containing characters that tell the new sense of the linear constraints specified in <code>ind</code> .

**Details**

Interface to the C function `chgSense` which calls the CPLEX function `CPXchgsense`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

chgTerminateCPLEX      *Change Termination Signal*

---

**Description**

The function chgTerminateCPLEX changes termination signal.

**Usage**

```
chgTerminateCPLEX(env, tval = 1)
```

**Arguments**

env                    An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

tval                   Single integer value.

**Value**

NULL

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[setTerminateCPLEX](#), [delTerminateCPLEX](#), [printTerminateCPLEX](#)

---

cleanupCoefCPLEX      *change Problem Coefficients to Zero That are Smaller in Magnitude Than the Tolerance Specified in the Argument eps*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcleanup. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
cleanupCoefCPLEX(env, lp, eps)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
eps	Single numeric value giving the tolerance.

**Details**

Interface to the C function `cleanupCoef` which calls the CPLEX function `CPXcleanup`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

cloneProbCPLEX      *Copy a CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXcloneprob`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
cloneProbCPLEX(env, lp, ptrtype = "cplex_prob")
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ptrtype	A name for the pointer object.

**Details**

Interface to the C function `cloneProb` which calls the CPLEX function `CPXcloneprob`.

**Value**

If successful a pointer to the new CPLEX problem object as returned by `initProbCPLEX` (an object of class "`cplexPtr`"), otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

closeEnvCPLEX

*Free all of the Data Structures Associated With CPLEX*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXcloseCPLEX`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
closeEnvCPLEX(env)
```

**Arguments**

`env` An object of class "`cplexPtr`" as returned by `openEnvCPLEX`. This is basically a pointer to an IBM ILOG CPLEX environment.

**Details**

Interface to the C function `closeEnv` which calls the CPLEX function `CPXcloseCPLEX`.

**Value**

Zero if successful, otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**[openEnvCPLEX](#)

---

closeFileCPLEX	<i>Close a File</i>
----------------	---------------------

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXfclose`. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where `CPXfclose` has been removed.

**Usage**

```
closeFileCPLEX(cpfile)
```

**Arguments**

`cpfile`            A pointer to a file as returned by [openFileCPLEX](#).

**Details**

Interface to the C function `cplexfclose` which calls the CPLEX function `CPXfclose`.

**Value**

Zero if successful, otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[fileputCPLEX](#), [openFileCPLEX](#)

---

`closeProbCPLEX`*Close CPLEX Environment And Remove CPLEX Problem Object*

---

**Description**

The function `closeProbCPLEX` closes a CPLEX environment and removes a CPLEX problem object.

**Usage**

```
closeProbCPLEX(prob)
```

**Arguments**

`prob` A list containing a pointer to an IBM ILOG CPLEX environment and a Pointer to an IBM ILOG CPLEX problem object. Both elements are objects of class "`cpLexPtr`" as returned by `openProbCPLEX`.

**Details**

Interface to the C functions `delProb` and `closeEnv` calling CPLEX functions `CPXcloseCPLEX` and `CPXfreeprob`.

**Value**

An integer vector containing the return values of `CPXcloseCPLEX` and `CPXfreeprob`.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[openProbCPLEX](#)

---

cLpWriteCPLEX	<i>Write an LP Format File Containing Identified Conflict</i>
---------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXclpwrite. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
cLpWriteCPLEX(env, lp, fname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the filename to write to.

### Details

Interface to the C function `cLpWriteCPLEX` which calls the CPLEX function `CPXclpwrite`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`completeIpCplex`*Manage Modification Steps Closely*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXcompleteIp`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
completeIpCplex(env, lp)
```

**Arguments**

- |                  |   |
|------------------|---|
| <code>env</code> | An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCplex</code> . This is basically a pointer to an IBM ILOG CPLEX environment.     |
| <code>lp</code>  | An object of class " <code>cplexPtr</code> " as returned by <code>initProbCplex</code> . This is basically a pointer to an IBM ILOG CPLEX problem object. |

**Details**

Interface to the C function `completeIpCplex` which calls the CPLEX function `CPXcompleteIp`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`copyBaseCPLEX`*Copies a Basis Into a CPLEX Problem Object.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopybase. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyBaseCPLEX(env, lp, cstat, rstat)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>cstat</code>	A vector containing the basis status of the columns in the constraint matrix.
<code>rstat</code>	A vector containing the basis status of the slack, or surplus, or artificial variable associated with each row in the constraint matrix.

**Details**

Interface to the C function `copyBase` which calls the CPLEX function `CPXcopybase`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyColTypeCPLEX      *Copy Variable Type Information Into a Given Problem*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXchgprobname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
copyColTypeCPLEX(env, lp, xtype)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
xctype	A vector containing the type of each column in the constraint matrix.

### Details

Interface to the C function `copyColType` which calls the CPLEX function `CPXcopyctype`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyLpCPLEX

*Copy Data Defining an LP Problem to a CPLEX Problem Object.*


---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcopylp. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
copyLpCPLEX(env, lp, nCols, nRows, lpdire, objf, rhs, sense,
            matbeg, matcnt, matind, matval, lb, ub, rngval = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nCols	Number of columns in the constraint matrix.
nRows	Number of rows in the constraint matrix.
lpdire	Single integer value that specifies whether the problem is a minimization or maximization problem.
objf	The objective function coefficients.
rhs	The righthand side values for each constraint in the constraint matrix.
sense	The sense of each constraint in the constraint matrix.
matbeg	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matcnt	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Containing the lower bound on each of the variables.
ub	Containing the lower bound on each of the variables.
rngval	Containing the range value of each ranged constraint.

### Details

Interface to the C function copyLp which calls the CPLEX function CPXcopylp.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyLpwNamesCPLEX      *Copy Data Defining an LP Problem to a CPLEX Problem Object.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopylpwnames. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyLpwNamesCPLEX(env, lp, nCols, nRows, lpdire, objf, rhs, sense,
                  matbeg, matcnt, matind, matval, lb, ub,
                  rngval = NULL, cnames = NULL, rnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nCols	Number of columns in the constraint matrix.
nRows	Number of rows in the constraint matrix.
lpdire	Single integer value that specifies whether the problem is a minimization or maximization problem.
objf	The objective function coefficients.
rhs	The righthand side values for each constraint in the constraint matrix.
sense	The sense of each constraint in the constraint matrix.
matbeg	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matcnt	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.

matind	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
lb	Containing the lower bound on each of the variables.
ub	Containing the lower bound on each of the variables.
rngval	Containing the range value of each ranged constraint.
cnames	Names of the matrix columns or, equivalently, the variable names.
rnames	Names of the matrix rows or, equivalently, the constraint names.

### Details

Interface to the C function copyLpwNames which calls the CPLEX function CPXcopylpwnames.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyObjNameCPLEX	<i>Copy a Name for the Objective Function Into a CPLEX Problem Object.</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcopyobjname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
copyObjNameCPLEX(env, lp, oname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
oname	A pointer to a character string containing the objective name.

**Details**

Interface to the C function copyObjName which calls the CPLEX function CPXcopyobjname.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyOrderCPLEX

*Copy Priority Order to CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopyorder. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyOrderCPLEX(env, lp, cnt, indices, priority = NULL, direction = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
cnt	Number of entries.
indices	Indices of the columns corresponding to the integer variables that are assigned priorities.
priority	Priorities assigned to the integer variables.
direction	Branching direction assigned to the integer variables.

**Details**

Interface to the C function copyOrder which calls the CPLEX function CPXcopyorder.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyPartBaseCPLEX      *Copies a partial basis into an LP problem object.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopypartialbase. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyPartBaseCPLEX(env, lp, ncind, cind, cstat, nrind, rind, rstat)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncind	An integer that specifies the number of variable or column status values specified.
cind	A vector that contains the indices of the variables for which status values are being specified.
cstat	A vector where the <i>i</i> th entry contains the status for variable <code>cind[i]</code> .
nrind	An integer that specifies the number of slack, surplus, or artificial status values specified.
rind	A vector <code>rent</code> that contains the indices of the slack, surplus, or artificial variables for which status values are being specified.
rstat	A vector of where the <i>i</i> -th entry contains the status for slack, surplus, or artificial <code>rind[i]</code> .

**Details**

Interface to the C function `copyPartBase` which calls the CPLEX function `CPXcopypartialbase`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

copyQPsepCPLEX

*Copy the Quadratic Objective Matrix  $Q$  for a Separable QP Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopyqpsep. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyQPsepCPLEX(env, lp, qsepvec)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
qsepvec	A vector containing the quadratic coefficients.

**Details**

Interface to the C function copyQPsep which calls the CPLEX function CPXcopyqpsep.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`copyQuadCPLEX`*Copy a Quadratic Objective Matrix  $Q$  When  $Q$  is not Diagonal.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXcopyquad. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
copyQuadCPLEX(env, lp, qmatbeg, qmatcnt, qmatind, qmatval)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>qmatbeg</code>	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
<code>qmatcnt</code>	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
<code>qmatind</code>	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.
<code>qmatval</code>	Array that defines the constraint matrix. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Details**

Interface to the C function `copyQuad` which calls the CPLEX function `CPXcopyquad`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

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copyStartCPLEX	<i>Provides Starting Information for Use in a Subsequent Call to a Simplex Optimization Routine.</i>
----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXcopystart. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
copyStartCPLEX(env, lp,
               cstat = NULL, rstat = NULL,
               cprim = NULL, rprim = NULL,
               cdual = NULL, rdual = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
cstat	A vector containing the basis status of the columns in the constraint matrix.
rstat	A vector containing the basis status of the slack, surplus, or artificial variable associated with each row in the constraint matrix.
cprim	A vector containing the initial primal values of the column variables.
rprim	A vector containing the initial primal values of the slack (row) variables.
cdual	A vector containing the initial values of the reduced costs for the column variables.
rdual	A vector containing the initial values of the dual variables for the rows.

### Details

Interface to the C function `copyStart` which calls the CPLEX function `CPXcopyStart`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>  
 Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

cplexConstants      *Constants, Parameters, Return and Status Codes of IBM ILOG CPLEX*

---

### Description

This is a list containing constants used by IBM ILOG CPLEX. Consult the IBM ILOG CPLEX manual for more information, in particular for the use of control parameters.

### General Parameters

CPX_INFBOUND	1.0E+20
CPX_STR_PARAM_MAX	512

### Types of parameters

CPX_PARAMTYPE_NONE	0
CPX_PARAMTYPE_INT	1
CPX_PARAMTYPE_DOUBLE	2
CPX_PARAMTYPE_STRING	3
CPX_PARAMTYPE_LONG	4

### Values returned for stat by solution

CPX_STAT_OPTIMAL	1
CPX_STAT_UNBOUNDED	2
CPX_STAT_INFEASIBLE	3
CPX_STAT_INFOrUNBD	4
CPX_STAT_OPTIMAL_INFEAS	5
CPX_STAT_NUM_BEST	6
CPX_STAT_ABORT_IT_LIM	10
CPX_STAT_ABORT_TIME_LIM	11
CPX_STAT_ABORT_OBJ_LIM	12
CPX_STAT_ABORT_USER	13
CPX_STAT_FEASIBLE_RELAXED_SUM	14
CPX_STAT_OPTIMAL_RELAXED_SUM	15
CPX_STAT_FEASIBLE_RELAXED_INF	16
CPX_STAT_OPTIMAL_RELAXED_INF	17
CPX_STAT_FEASIBLE_RELAXED_QUAD	18

CPX_STAT_OPTIMAL_RELAXED_QUAD	19
CPX_STAT_FEASIBLE	23
CPX_STAT_ABORT_DETTIME_LIM	25

### Solution type return values from CPXsolninfo

CPX_NO_SOLN	0
CPX_BASIC_SOLN	1
CPX_NONBASIC_SOLN	2
CPX_PRIMAL_SOLN	3

### Values of presolve stats for columns and rows

CPX_PRECOL_LOW	-1	fixed to original lb
CPX_PRECOL_UP	-2	fixed to original ub
CPX_PRECOL_FIX	-3	fixed to some other value
CPX_PRECOL_AGG	-4	aggregated $y = a \times x + b$
CPX_PRECOL_OTHER	-5	cannot be expressed by a linear combination of active variables in the presolved model crushing w
CPX_PREROW_RED	-1	redundant row removed in presolved model
CPX_PREROW_AGG	-2	used to aggregate a variable
CPX_PREROW_OTHER	-3	other, for example merge two inequalities into a single equation

### Generic constants

CPX_ON	1
CPX_OFF	0
CPX_MAX	-1
CPX_MIN	1

### Primal simplex pricing algorithm

CPX_PPRIIND_PARTIAL	-1
CPX_PPRIIND_AUTO	0
CPX_PPRIIND_DEVEX	1

CPX_PPRIIND_STEEP	2
CPX_PPRIIND_STEEPQSTART	3
CPX_PPRIIND_FULL	4

### Dual simplex pricing algorithm

CPX_DPRIIND_AUTO	0
CPX_DPRIIND_FULL	1
CPX_DPRIIND_STEEP	2
CPX_DPRIIND_FULL_STEEP	3
CPX_DPRIIND_STEEPQSTART	4
CPX_DPRIIND_DEVEX	5

### PARALLELMODE values

CPX_PARALLEL_DETERMINISTIC	1
CPX_PARALLEL_AUTO	0
CPX_PARALLEL_OPPORTUNISTIC	-1

### Values for CPX\_PARAM\_WRITELEVEL

CPX_WRITELEVEL_AUTO	0
CPX_WRITELEVEL_ALLVARS	1
CPX_WRITELEVEL_DISCRETEVARS	2
CPX_WRITELEVEL_NONZEROVARS	3
CPX_WRITELEVEL_NONZERODISCRETEVARS	4

### Values for CPX\_PARAM\_SOLUTIONTARGET

CPX_SOLUTIONTARGET_AUTO	0
CPX_SOLUTIONTARGET_OPTIMALCONVEX	1
CPX_SOLUTIONTARGET_FIRSTORDER	2
CPX_SOLUTIONTARGET_OPTIMALGLOBAL	3

**LP/QP solution algorithms**

Used as possible values for CPX\_PARAM\_LPMETHOD, CPX\_PARAM\_QPMETHOD, CPX\_PARAM\_BARCROSSALG, CPXgetmethod, ...

CPX_ALG_NONE	-1
CPX_ALG_AUTOMATIC	0
CPX_ALG_PRIMAL	1
CPX_ALG_DUAL	2
CPX_ALG_NET	3
CPX_ALG_BARRIER	4
CPX_ALG_SIFTING	5
CPX_ALG_CONCURRENT	6
CPX_ALG_BAROPT	7
CPX_ALG_PIVOTIN	8
CPX_ALG_PIVOTOUT	9
CPX_ALG_PIVOT	10
CPX_ALG_FEASOPT	11
CPX_ALG_MIP	12
CPX_ALG_ROBUST	13

**Basis status values**

CPX_AT_LOWER	0
CPX_BASIC	1
CPX_AT_UPPER	2
CPX_FREE_SUPER	3

**Variable types for ctype array**

CPX_CONTINUOUS	"C"
CPX_BINARY	"B"
CPX_INTEGER	"I"
CPX_SEMICONT	"S"
CPX_SEMIINT	"N"

**PREREDUCE settings**

CPX_PREREDUCE_PRIMALANDDUAL	3
CPX_PREREDUCE_DUALONLY	2
CPX_PREREDUCE_PRIMALONLY	1
CPX_PREREDUCE_NOPRIMALORDUAL	0

### Conflict statuses

CPX_STAT_CONFLICT_FEASIBLE	30
CPX_STAT_CONFLICT_MINIMAL	31
CPX_STAT_CONFLICT_ABORT_CONTRADICTION	32
CPX_STAT_CONFLICT_ABORT_TIME_LIM	33
CPX_STAT_CONFLICT_ABORT_IT_LIM	34
CPX_STAT_CONFLICT_ABORT_NODE_LIM	35
CPX_STAT_CONFLICT_ABORT_OBJ_LIM	36
CPX_STAT_CONFLICT_ABORT_MEM_LIM	37
CPX_STAT_CONFLICT_ABORT_USER	38
CPX_STAT_CONFLICT_ABORT_DETTIME_LIM	39

### Conflict status values

CPX_CONFLICT_EXCLUDED	-1
CPX_CONFLICT_POSSIBLE_MEMBER	0
CPX_CONFLICT_POSSIBLE_LB	1
CPX_CONFLICT_POSSIBLE_UB	2
CPX_CONFLICT_MEMBER	3
CPX_CONFLICT_LB	4
CPX_CONFLICT_UB	5

### Problem Types

Types 4, 9, and 12 are internal, the others are for users.

CPXPROB_LP	0
CPXPROB_MILP	1
CPXPROB_FIXEDMILP	3
CPXPROB_NODELP	4
CPXPROB_QP	5
CPXPROB_MIQP	7

CPXPROB_FIXEDMIQP	8
CPXPROB_NODEQP	9
CPXPROB_QCP	10
CPXPROB_MIQCP	11
CPXPROB_NODEQCP	12

### CPLEX Parameter numbers

CPX_PARAM_ADVIND	1001
CPX_PARAM_AGGFILL	1002
CPX_PARAM_AGGIND	1003
CPX_PARAM_BASINTERVAL	1004
CPX_PARAM_CFITEMUL	1005
CPX_PARAM_CLOCKTYPE	1006
CPX_PARAM_CRAIND	1007
CPX_PARAM_DEPIND	1008
CPX_PARAM_DPRIIND	1009
CPX_PARAM_PRICELIM	1010
CPX_PARAM_EPMRK	1013
CPX_PARAM_EPOPT	1014
CPX_PARAM_EPPER	1015
CPX_PARAM_EPRHS	1016
CPX_PARAM_FASTMIP	1017
CPX_PARAM_SIMDISPLAY	1019
CPX_PARAM_ITLIM	1020
CPX_PARAM_ROWREADLIM	1021
CPX_PARAM_NETFIND	1022
CPX_PARAM_COLREADLIM	1023
CPX_PARAM_NZREADLIM	1024
CPX_PARAM_OBJLLIM	1025
CPX_PARAM_OBJULIM	1026
CPX_PARAM_PERIND	1027
CPX_PARAM_PERLIM	1028
CPX_PARAM_PPRIIND	1029
CPX_PARAM_PREIND	1030
CPX_PARAM_REINV	1031
CPX_PARAM_REVERSEIND	1032
CPX_PARAM_RFILEMUL	1033
CPX_PARAM_SCAIND	1034
CPX_PARAM_SCRIND	1035
CPX_PARAM_SINGLIM	1037
CPX_PARAM_SINGTOL	1038
CPX_PARAM_TILIM	1039
CPX_PARAM_XXXIND	1041
CPX_PARAM_PREDUAL	1044
CPX_PARAM_EPOPT_H	1049
CPX_PARAM_EPRHS_H	1050

CPX_PARAM_PREPASS	1052
CPX_PARAM_DATACHECK	1056
CPX_PARAM_REDUCE	1057
CPX_PARAM_PRELINEAR	1058
CPX_PARAM_LPMETHOD	1062
CPX_PARAM_QPMETHOD	1063
CPX_PARAM_WORKDIR	1064
CPX_PARAM_WORKMEM	1065
CPX_PARAM_THREADS	1067
CPX_PARAM_CONFLICTDISPLAY	1074
CPX_PARAM_SIFTDISPLAY	1076
CPX_PARAM_SIFTALG	1077
CPX_PARAM_SIFTITLIM	1078
CPX_PARAM_MPSSLONGNUM	1081
CPX_PARAM_MEMORYEMPHASIS	1082
CPX_PARAM_NUMERICALEMPHASIS	1083
CPX_PARAM_FEASOPTMODE	1084
CPX_PARAM_PARALLELMODE	1109
CPX_PARAM_TUNINGMEASURE	1110
CPX_PARAM_TUNINGREPEAT	1111
CPX_PARAM_TUNINGTILIM	1112
CPX_PARAM_TUNINGDISPLAY	1113
CPX_PARAM_WRITELEVEL	1114
CPX_PARAM_RANDOMSEED	1124
CPX_PARAM_DETTILIM	1127
CPX_PARAM_FILEENCODING	1129
CPX_PARAM_APIENCODING	1130
CPX_PARAM_SOLUTIONTARGET	1131
CPX_PARAM_CLONELOG	1132
CPX_PARAM_TUNINGDETTILIM	1139
CPX_PARAM_ALL_MIN	1000
CPX_PARAM_ALL_MAX	6000

**Values for CPX\_PARAM\_TUNINGMEASURE**

CPX_TUNE_AVERAGE	1
CPX_TUNE_MINMAX	2

**Values for incomplete tuning**

CPX_TUNE_ABORT	1
----------------	---

CPX_TUNE_TILIM	2
CPX_TUNE_DETTILIM	3

### Quality query identifiers

CPX_MAX_PRIMAL_INFEAS	1
CPX_MAX_SCALED_PRIMAL_INFEAS	2
CPX_SUM_PRIMAL_INFEAS	3
CPX_SUM_SCALED_PRIMAL_INFEAS	4
CPX_MAX_DUAL_INFEAS	5
CPX_MAX_SCALED_DUAL_INFEAS	6
CPX_SUM_DUAL_INFEAS	7
CPX_SUM_SCALED_DUAL_INFEAS	8
CPX_MAX_INT_INFEAS	9
CPX_SUM_INT_INFEAS	10
CPX_MAX_PRIMAL_RESIDUAL	11
CPX_MAX_SCALED_PRIMAL_RESIDUAL	12
CPX_SUM_PRIMAL_RESIDUAL	13
CPX_SUM_SCALED_PRIMAL_RESIDUAL	14
CPX_MAX_DUAL_RESIDUAL	15
CPX_MAX_SCALED_DUAL_RESIDUAL	16
CPX_SUM_DUAL_RESIDUAL	17
CPX_SUM_SCALED_DUAL_RESIDUAL	18
CPX_MAX_COMP_SLACK	19
CPX_SUM_COMP_SLACK	21
CPX_MAX_X	23
CPX_MAX_SCALED_X	24
CPX_MAX_PI	25
CPX_MAX_SCALED_PI	26
CPX_MAX_SLACK	27
CPX_MAX_SCALED_SLACK	28
CPX_MAX_RED_COST	29
CPX_MAX_SCALED_RED_COST	30
CPX_SUM_X	31
CPX_SUM_SCALED_X	32
CPX_SUM_PI	33
CPX_SUM_SCALED_PI	34
CPX_SUM_SLACK	35
CPX_SUM_SCALED_SLACK	36
CPX_SUM_RED_COST	37
CPX_SUM_SCALED_RED_COST	38
CPX_KAPPA	39
CPX_OBJ_GAP	40
CPX_DUAL_OBJ	41
CPX_PRIMAL_OBJ	42

CPX_MAX_QCPRIMAL_RESIDUAL	43
CPX_SUM_QCPRIMAL_RESIDUAL	44
CPX_MAX_QCSLACK_INFEAS	45
CPX_SUM_QCSLACK_INFEAS	46
CPX_MAX_QCSLACK	47
CPX_SUM_QCSLACK	48
CPX_MAX_INDSLACK_INFEAS	49
CPX_SUM_INDSLACK_INFEAS	50
CPX_EXACT_KAPPA	51
CPX_KAPPA_STABLE	52
CPX_KAPPA_SUSPICIOUS	53
CPX_KAPPA_UNSTABLE	54
CPX_KAPPA_ILLPOSED	55
CPX_KAPPA_MAX	56
CPX_KAPPA_ATTENTION	57

### Solution quality symbols new in CPLEX 12.9.0

CPX_MAX_PWLSLACK_INFEAS	58
CPX_SUM_PWLSLACK_INFEAS	59

### feasopt options

CPX_FEASOPT_MIN_SUM	0
CPX_FEASOPT_OPT_SUM	1
CPX_FEASOPT_MIN_INF	2
CPX_FEASOPT_OPT_INF	3
CPX_FEASOPT_MIN_QUAD	4
CPX_FEASOPT_OPT_QUAD	5

### File: barconst.h

CPX_STAT_OPTIMAL_FACE_UNBOUNDED	20
CPX_STAT_ABORT_PRIM_OBJ_LIM	21
CPX_STAT_ABORT_DUAL_OBJ_LIM	22
CPX_STAT_FIRSTORDER	24

**Barrier parameters**

CPX_PARAM_BARDSTART	3001
CPX_PARAM_BAREPCOMP	3002
CPX_PARAM_BARGROWTH	3003
CPX_PARAM_BAROBJRNG	3004
CPX_PARAM_BARPSTART	3005
CPX_PARAM_BARALG	3007
CPX_PARAM_BARCOLNZ	3009
CPX_PARAM_BARDISPLAY	3010
CPX_PARAM_BARITLIM	3012
CPX_PARAM_BARMAXCOR	3013
CPX_PARAM_BARORDER	3014
CPX_PARAM_BARSTARTALG	3017
CPX_PARAM_BARCROSSALG	3018
CPX_PARAM_BARQCPEPCOMP	3020

**Optimizing Problems**

CPX_BARORDER_AUTO	0
CPX_BARORDER_AMD	1
CPX_BARORDER_AMF	2
CPX_BARORDER_ND	3

**MIP emphasis settings**

CPX_MIPEMPHASIS_BALANCED	0
CPX_MIPEMPHASIS_FEASIBILITY	1
CPX_MIPEMPHASIS_OPTIMALITY	2
CPX_MIPEMPHASIS_BESTBOUND	3
CPX_MIPEMPHASIS_HIDDENFEAS	4

**Values for sostype and branch type**

CPX_TYPE_VAR	"0"
--------------	-----

CPX_TYPE_SOS1	"1"
CPX_TYPE_SOS2	"2"
CPX_TYPE_USER	"X"
CPX_TYPE_ANY	"A"

**Variable selection values**

CPX_VARSEL_MININFEAS	-1
CPX_VARSEL_DEFAULT	0
CPX_VARSEL_MAXINFEAS	1
CPX_VARSEL_PSEUDO	2
CPX_VARSEL_STRONG	3
CPX_VARSEL_PSEUDOREduced	4

**Node selection values**

CPX_NODESEL_DFS	0
CPX_NODESEL_BESTBOUND	1
CPX_NODESEL_BESTEST	2
CPX_NODESEL_BESTEST_ALT	3

**Values for generated priority order**

CPX_MIPORDER_COST	1
CPX_MIPORDER_BOUNDS	2
CPX_MIPORDER_SCALED_COST	3

**Values for direction array**

CPX_BRANCH_GLOBAL	0
CPX_BRANCH_DOWN	-1
CPX_BRANCH_UP	1

**Values for CPX\_PARAM\_BRDIR**

CPX_BRDIR_DOWN	-1
CPX_BRDIR_AUTO	0
CPX_BRDIR_UP	1

**Values for CPX\_PARAM\_MIPSEARCH**

CPX_MIPSEARCH_AUTO	0
CPX_MIPSEARCH_TRADITIONAL	1
CPX_MIPSEARCH_DYNAMIC	2

**Values for CPX\_PARAM\_MIPKAPPASTATS**

CPX_MIPKAPPA_OFF	-1
CPX_MIPKAPPA_AUTO	0
CPX_MIPKAPPA_SAMPLE	1
CPX_MIPKAPPA_FULL	2

**Effort levels for MIP starts**

CPX_MIPSTART_AUTO	0
CPX_MIPSTART_CHECKFEAS	1
CPX_MIPSTART_SOLVEMIP	2
CPX_MIPSTART_SOLVEMIP	3
CPX_MIPSTART_REPAIR	4

**MIP Problem status codes**

CPXMIP_OPTIMAL	101
CPXMIP_OPTIMAL_TOL	102

CPXMIP_INFEASIBLE	103
CPXMIP_SOL_LIM	104
CPXMIP_NODE_LIM_FEAS	105
CPXMIP_NODE_LIM_INFEAS	106
CPXMIP_TIME_LIM_FEAS	107
CPXMIP_TIME_LIM_INFEAS	108
CPXMIP_FAIL_FEAS	109
CPXMIP_FAIL_INFEAS	110
CPXMIP_MEM_LIM_FEAS	111
CPXMIP_MEM_LIM_INFEAS	112
CPXMIP_ABORT_FEAS	113
CPXMIP_ABORT_INFEAS	114
CPXMIP_OPTIMAL_INFEAS	115
CPXMIP_FAIL_FEAS_NO_TREE	116
CPXMIP_FAIL_INFEAS_NO_TREE	117
CPXMIP_UNBOUNDED	118
CPXMIP_INForUNBD	119
CPXMIP_FEASIBLE_RELAXED_SUM	120
CPXMIP_OPTIMAL_RELAXED_SUM	121
CPXMIP_FEASIBLE_RELAXED_INF	122
CPXMIP_OPTIMAL_RELAXED_INF	123
CPXMIP_FEASIBLE_RELAXED_QUAD	124
CPXMIP_OPTIMAL_RELAXED_QUAD	125
CPXMIP_ABORT_RELAXED	126
CPXMIP_FEASIBLE	127
CPXMIP_POPULATESOL_LIM	128
CPXMIP_OPTIMAL_POPULATED	129
CPXMIP_OPTIMAL_POPULATED_TOL	130
CPXMIP_DETTIME_LIM_FEAS	131
CPXMIP_DETTIME_LIM_INFEAS	132

### Valid purgeable values for adding usercuts and lazyconstraints

CPX_USECUT_FORCE	0
CPX_USECUT_PURGE	1
CPX_USECUT_FILTER	2

### For CPXgetnodeintfeas

CPX_INTEGER_FEASIBLE	0
CPX_INTEGER_INFEASIBLE	1

CPX\_IMPLIED\_INTEGER\_FEASIBLE 2

**MIP Parameter numbers**

CPX_PARAM_BRDIR	2001
CPX_PARAM_BTTOL	2002
CPX_PARAM_CLIQUES	2003
CPX_PARAM_COEREDIND	2004
CPX_PARAM_COVERS	2005
CPX_PARAM_CUTLO	2006
CPX_PARAM_CUTUP	2007
CPX_PARAM_EPAGAP	2008
CPX_PARAM_EPGAP	2009
CPX_PARAM_EPINT	2010
CPX_PARAM_MIPDISPLAY	2012
CPX_PARAM_MIPINTERVAL	2013
CPX_PARAM_INTSOLLIM	2015
CPX_PARAM_NODEFILEIND	2016
CPX_PARAM_NODELIM	2017
CPX_PARAM_NODESEL	2018
CPX_PARAM_OBJDIF	2019
CPX_PARAM_MIPORDIND	2020
CPX_PARAM_RELOBJDIF	2022
CPX_PARAM_STARTALG	2025
CPX_PARAM_SUBALG	2026
CPX_PARAM_TRELIM	2027
CPX_PARAM_VARSEL	2028
CPX_PARAM_BNDSTRENIND	2029
CPX_PARAM_HEURFREQ	2031
CPX_PARAM_MIPORDTYPE	2032
CPX_PARAM_CUTSFACOR	2033
CPX_PARAM_RELAXPREIND	2034
CPX_PARAM_PRESLVND	2037
CPX_PARAM_BBINTERVAL	2039
CPX_PARAM_FLOWCOVERS	2040
CPX_PARAM_IMPLBD	2041
CPX_PARAM_PROBE	2042
CPX_PARAM_GUBCOVERS	2044
CPX_PARAM_STRONGCANDLIM	2045
CPX_PARAM_STRONGITLIM	2046
CPX_PARAM_FRACCAND	2048
CPX_PARAM_FRACCUTS	2049
CPX_PARAM_FRACPASS	2050
CPX_PARAM_FLOWPATHS	2051
CPX_PARAM_MIRCUTS	2052

CPX_PARAM_DISJCUTS	2053
CPX_PARAM_AGGCUTLIM	2054
CPX_PARAM_MIPCBREDLP	2055
CPX_PARAM_CUTPASS	2056
CPX_PARAM_MIPEMPHASIS	2058
CPX_PARAM_SYMMETRY	2059
CPX_PARAM_DIVETYPE	2060
CPX_PARAM_RINSHEUR	2061
CPX_PARAM_SUBMIPNODELIM	2062
CPX_PARAM_LBHEUR	2063
CPX_PARAM_REPEATPRESOLVE	2064
CPX_PARAM_PROBETIME	2065
CPX_PARAM_POLISHTIME	2066
CPX_PARAM_REPAIRTRIES	2067
CPX_PARAM_EPLIN	2068
CPX_PARAM_EPRELAX	2073
CPX_PARAM_FPHEUR	2098
CPX_PARAM_EACHCUTLIM	2102
CPX_PARAM_SOLNPOOLCAPACITY	2103
CPX_PARAM_SOLNPOOLREPLACE	2104
CPX_PARAM_SOLNPOOLGAP	2105
CPX_PARAM_SOLNPOOLAGAP	2106
CPX_PARAM_SOLNPOOLINTENSITY	2107
CPX_PARAM_POPULATELIM	2108
CPX_PARAM_MIPSEARCH	2109
CPX_PARAM_MIQCPSTRAT	2110
CPX_PARAM_ZEROHALFCUTS	2111
CPX_PARAM_POLISHAFTEREPAGAP	2126
CPX_PARAM_POLISHAFTEREPGAP	2127
CPX_PARAM_POLISHAFTERNODE	2128
CPX_PARAM_POLISHAFTERINTSOL	2129
CPX_PARAM_POLISHAFTERTIME	2130
CPX_PARAM_MCFCUTS	2134
CPX_PARAM_MIPKAPPASTATS	2137
CPX_PARAM_AUXROOTTHREADS	2139
CPX_PARAM_INTSOLFILEPREFIX	2143
CPX_PARAM_PROBEDETTIME	2150
CPX_PARAM_POLISHAFTERDETTIME	2151
CPX_PARAM_LANDPCUTS	2152
CPX_PARAM_RAMPUPDURATION	2163
CPX_PARAM_RAMPUPDETTILIM	2164
CPX_PARAM_RAMPUPUTILIM	2165

**Values for** CPX\_PARAM\_SOLNPOOLREPLACE

CPX_SOLNPOOL_FIFO	0
CPX_SOLNPOOL_OBJ	1
CPX_SOLNPOOL_DIV	2
CPX_SOLNPOOL_FILTER_DIVERSITY	1
CPX_SOLNPOOL_FILTER_RANGE	2

**File: gconst.h**

CPX_CON_LOWER_BOUND	1
CPX_CON_UPPER_BOUND	2
CPX_CON_LINEAR	3
CPX_CON_QUADRATIC	4
CPX_CON_SOS	5
CPX_CON_INDICATOR	6

**internal types**

CPX_CON_MINEXPR	7
CPX_CON_MAXEXPR	8
CPX_CON_PWL	9
CPX_CON_ABS	9
CPX_CON_DISJCST	10
CPX_CON_INDDISJCST	11
CPX_CON_SETVAR	12
CPX_CON_SETVARMEMBER	13
CPX_CON_SETVARCARD	14
CPX_CON_SETVARSUM	15
CPX_CON_SETVARMIN	16
CPX_CON_SETVARMAX	17
CPX_CON_SETVARSUBSET	18
CPX_CON_SETVARDOMAIN	19
CPX_CON_SETVARUNION	20
CPX_CON_SETVARINTERSECTION	21
CPX_CON_SETVARNULLINTERSECT	22
CPX_CON_SETVARINTERSECT	23
CPX_CON_SETVAREQ	24
CPX_CON_SETVARNEQ	25
CPX_CON_SETVARNEQCST	26
CPX_CON_LAST_CONTYPE	27

**Network parameters**

CPX_PARAM_NETITLIM	5001
CPX_PARAM_NETEPOPT	5002
CPX_PARAM_NETEPRHS	5003
CPX_PARAM_NETPPRIIND	5004
CPX_PARAM_NETDISPLAY	5005

**NETOPT display values**

CPXNET_NO_DISPLAY_OBJECTIVE	0
CPXNET_TRUE_OBJECTIVE	1
CPXNET_PENALIZED_OBJECTIVE	2

**NETOPT pricing parameters**

CPXNET_PRICE_AUTO	0
CPXNET_PRICE_PARTIAL	1
CPXNET_PRICE_MULT_PART	2
CPXNET_PRICE_SORT_MULT_PART	3

**Copying data**

CPX_PARAM_QPNZREADLIM	4001
-----------------------	------

**Specify how to calculate duals for QCPs**

CPX_PARAM_CALCQCPDUALS	4003
------------------------	------

**presolve**

CPX\_PARAM\_QPMAKEPSDIND 4010

**Error codes**

Callable library miscellaneous routines

CPXERR\_NEGATIVE\_SURPLUS 1207  
 CPXERR\_NO\_SENSIT 1260

**Error codes new in CPLEX 12.8.0**

Callable library miscellaneous routines

CPXERR\_CALLBACK\_INCONSISTENT 1060  
 CPXERR\_CAND\_NOT\_RAY 3026  
 CPXERR\_CAND\_NOT\_POINT 3025

**Error codes new in CPLEX 12.9.0**

Callable library miscellaneous routines

CPXERR\_BAD\_MULTIOBJ\_ATTR 1488  
 CPXERR\_MULTIOBJ\_SUBPROB\_SOLVE 1300  
 CPXERR\_NO\_OBJ\_NAME 1486  
 CPXERR\_NOT\_FOR\_MULTIOBJ 1070

**new parameter names introduced in IBM ILOG CPLEX version 12.6**

Callable library miscellaneous routines

CPXPARAM\_Advance 1001  
 CPXPARAM\_Barrier\_Algorithm 3007  
 CPXPARAM\_Barrier\_ColNonzeros 3009  
 CPXPARAM\_Barrier\_ConvergeTol 3002  
 CPXPARAM\_Barrier\_Crossover 3018  
 CPXPARAM\_Barrier\_Display 3010  
 CPXPARAM\_Barrier\_Limits\_Corrections 3013  
 CPXPARAM\_Barrier\_Limits\_Growth 3003  
 CPXPARAM\_Barrier\_Limits\_Iteration 3012  
 CPXPARAM\_Barrier\_Limits\_ObjRange 3004  
 CPXPARAM\_Barrier\_Ordering 3014

CPXPARAM_Barrier_QCPConvergeTol	3020
CPXPARAM_Barrier_StartAlg	3017
CPXPARAM_ClockType	1006
CPXPARAM_Conflict_Display	1074
CPXPARAM_DetTimeLimit	1127
CPXPARAM_DistMIP_Rampup_DetTimeLimit	2164
CPXPARAM_DistMIP_Rampup_Duration	2163
CPXPARAM_DistMIP_Rampup_TimeLimit	2165
CPXPARAM_Emphasis_Memory	1082
CPXPARAM_Emphasis_MIP	2058
CPXPARAM_Emphasis_Numerical	1083
CPXPARAM_Feasopt_Mode	1084
CPXPARAM_Feasopt_Tolerance	2073
CPXPARAM_LPMethod	1062
CPXPARAM_MIP_Cuts_Cliques	2003
CPXPARAM_MIP_Cuts_Covers	2005
CPXPARAM_MIP_Cuts_Disjunctive	2053
CPXPARAM_MIP_Cuts_FlowCovers	2040
CPXPARAM_MIP_Cuts_Gomory	2049
CPXPARAM_MIP_Cuts_GUBCovers	2044
CPXPARAM_MIP_Cuts_Implied	2041
CPXPARAM_MIP_Cuts_LiftProj	2152
CPXPARAM_MIP_Cuts_MFCut	2134
CPXPARAM_MIP_Cuts_MIRCut	2052
CPXPARAM_MIP_Cuts_PathCut	2051
CPXPARAM_MIP_Cuts_ZeroHalfCut	2111
CPXPARAM_MIP_Display	2012
CPXPARAM_MIP_Interval	2013
CPXPARAM_MIP_Limits_AggForCut	2054
CPXPARAM_MIP_Limits_AuxRootThreads	2139
CPXPARAM_MIP_Limits_CutPasses	2056
CPXPARAM_MIP_Limits_CutsFactor	2033
CPXPARAM_MIP_Limits_EachCutLimit	2102
CPXPARAM_MIP_Limits_GomoryCand	2048
CPXPARAM_MIP_Limits_GomoryPass	2050
CPXPARAM_MIP_Limits_Nodes	2017
CPXPARAM_MIP_Limits_PolishTime	2066
CPXPARAM_MIP_Limits_Populate	2108
CPXPARAM_MIP_Limits_ProbeDetTime	2150
CPXPARAM_MIP_Limits_ProbeTime	2065
CPXPARAM_MIP_Limits_RepairTries	2067
CPXPARAM_MIP_Limits_Solutions	2015
CPXPARAM_MIP_Limits_StrongCand	2045
CPXPARAM_MIP_Limits_StrongIt	2046
CPXPARAM_MIP_Limits_SubMIPNodeLim	2062
CPXPARAM_MIP_Limits_TreeMemory	2027
CPXPARAM_MIP_OrderType	2032
CPXPARAM_MIP_PolishAfter_AbsMIPGap	2126

CPXPARAM_MIP_PolishAfter_DetTime	2151
CPXPARAM_MIP_PolishAfter_MIPGap	2127
CPXPARAM_MIP_PolishAfter_Nodes	2128
CPXPARAM_MIP_PolishAfter_Solutions	2129
CPXPARAM_MIP_PolishAfter_Time	2130
CPXPARAM_MIP_Pool_AbsGap	2106
CPXPARAM_MIP_Pool_Capacity	2103
CPXPARAM_MIP_Pool_Intensity	2107
CPXPARAM_MIP_Pool_RelGap	2105
CPXPARAM_MIP_Pool_Replace	2104
CPXPARAM_MIP_Strategy_Backtrack	2002
CPXPARAM_MIP_Strategy_BBInterval	2039
CPXPARAM_MIP_Strategy_Branch	2001
CPXPARAM_MIP_Strategy_CallbackReducedLP	2055
CPXPARAM_MIP_Strategy_Dive	2060
CPXPARAM_MIP_Strategy_File	2016
CPXPARAM_MIP_Strategy_FPHeur	2098
CPXPARAM_MIP_Strategy_HeuristicFreq	2031
CPXPARAM_MIP_Strategy_KappaStats	2137
CPXPARAM_MIP_Strategy_LBHeur	2063
CPXPARAM_MIP_Strategy_MIQCPStrat	2110
CPXPARAM_MIP_Strategy_NodeSelect	2018
CPXPARAM_MIP_Strategy_Order	2020
CPXPARAM_MIP_Strategy_PresolveNode	2037
CPXPARAM_MIP_Strategy_Probe	2042
CPXPARAM_MIP_Strategy_RINSHeur	2061
CPXPARAM_MIP_Strategy_Search	2109
CPXPARAM_MIP_Strategy_StartAlgorithm	2025
CPXPARAM_MIP_Strategy_SubAlgorithm	2026
CPXPARAM_MIP_Strategy_VariableSelect	2028
CPXPARAM_MIP_Tolerances_AbsMIPGap	2008
CPXPARAM_MIP_Tolerances_Integrality	2010
CPXPARAM_MIP_Tolerances_LowerCutoff	2006
CPXPARAM_MIP_Tolerances_MIPGap	2009
CPXPARAM_MIP_Tolerances_ObjDifference	2019
CPXPARAM_MIP_Tolerances_RelObjDifference	2022
CPXPARAM_MIP_Tolerances_UpperCutoff	2007
CPXPARAM_Network_Display	5005
CPXPARAM_Network_Iterations	5001
CPXPARAM_Network_NetFind	1022
CPXPARAM_Network_Pricing	5004
CPXPARAM_Network_Tolerances_Feasibility	5003
CPXPARAM_Network_Tolerances_Optimality	5002
CPXPARAM_Output_CloneLog	1132
CPXPARAM_Output_IntSolFilePrefix	2143
CPXPARAM_Output_MPSPong	1081
CPXPARAM_Output_WriteLevel	1114
CPXPARAM_Parallel	1109

CPXPARAM_Preprocessing_Aggregator	1003
CPXPARAM_Preprocessing_BoundStrength	2029
CPXPARAM_Preprocessing_CoeffReduce	2004
CPXPARAM_Preprocessing_Dependency	1008
CPXPARAM_Preprocessing_Dual	1044
CPXPARAM_Preprocessing_Fill	1002
CPXPARAM_Preprocessing_Linear	1058
CPXPARAM_Preprocessing_NumPass	1052
CPXPARAM_Preprocessing_Presolve	1030
CPXPARAM_Preprocessing_QCPDuals	4003
CPXPARAM_Preprocessing_QPMakePSD	4010
CPXPARAM_Preprocessing_Reduce	1057
CPXPARAM_Preprocessing_Relax	2034
CPXPARAM_Preprocessing_RepeatPresolve	2064
CPXPARAM_Preprocessing_Symmetry	2059
CPXPARAM_QPMethod	1063
CPXPARAM_RandomSeed	1124
CPXPARAM_Read_APIEncoding	1130
CPXPARAM_Read_Constraints	1021
CPXPARAM_Read_DataCheck	1056
CPXPARAM_Read_FileEncoding	1129
CPXPARAM_Read_Nonzeros	1024
CPXPARAM_Read_QPNonzeros	4001
CPXPARAM_Read_Scale	1034
CPXPARAM_Read_Variables	1023
CPXPARAM_ScreenOutput	1035
CPXPARAM_Sifting_Algorithm	1077
CPXPARAM_Sifting_Display	1076
CPXPARAM_Sifting_Iterations	1078
CPXPARAM_Simplex_Crash	1007
CPXPARAM_Simplex_DGradient	1009
CPXPARAM_Simplex_Display	1019
CPXPARAM_Simplex_Limits_Iterations	1020
CPXPARAM_Simplex_Limits_LowerObj	1025
CPXPARAM_Simplex_Limits_Perturbation	1028
CPXPARAM_Simplex_Limits_Singularity	1037
CPXPARAM_Simplex_Limits_UpperObj	1026
CPXPARAM_Simplex_Perturbation_Constant	1015
CPXPARAM_Simplex_Perturbation_Indicator	1027
CPXPARAM_Simplex_PGradient	1029
CPXPARAM_Simplex_Pricing	1010
CPXPARAM_Simplex_Refactor	1031
CPXPARAM_Simplex_Tolerances_Feasibility	1016
CPXPARAM_Simplex_Tolerances_Markowitz	1013
CPXPARAM_Simplex_Tolerances_Optimality	1014
CPXPARAM_SolutionTarget	1131
CPXPARAM_Threads	1067
CPXPARAM_TimeLimit	1039

CPXPARAM_Tune_DetTimeLimit	1139
CPXPARAM_Tune_Display	1113
CPXPARAM_Tune_Measure	1110
CPXPARAM_Tune_Repeat	1111
CPXPARAM_Tune_TimeLimit	1112
CPXPARAM_WorkDir	1064
CPXPARAM_WorkMem	1065

### new parameter names introduced in IBM ILOG CPLEX version 12.8.0

Callable library miscellaneous routines

CPXPARAM_Record	1162
CPXPARAM_MIP_Strategy_SubMIPScale	2207
CPXPARAM_MIP_Strategy_SubMIPStartAlg	2205
CPXPARAM_MIP_Strategy_SubMIPSubAlg	2206
CPXPARAM_ParamDisplay	1163
CPX_PARAM_PARAMDISPLAY	1163
CPXMI_SAMECOEFF_ROW	1049
CPXMI_SAMECOEFF_COL	1050
CPXMI_SAMECOEFF_IND	1051
CPXMI_SAMECOEFF_QLIN	1052
CPXMI_SAMECOEFF_QUAD	1053
CPXMI_SAMECOEFF_LAZY	1054
CPXMI_SAMECOEFF_UCUT	1055
CPXMI_SAMECOEFF_RHS	1056
CPXMI_SAMECOEFF_OBJ	1057
CPX_CALLBACKCONTEXT_CANDIDATE	0x0020
CPX_CALLBACKCONTEXT_GLOBAL_PROGRESS	0x0010
CPX_CALLBACKCONTEXT_LOCAL_PROGRESS	0x0008
CPX_CALLBACKCONTEXT_RELAXATION	0x0040
CPX_CALLBACKCONTEXT_THREAD_DOWN	0x0004
CPX_CALLBACKCONTEXT_THREAD_UP	0x0002

### new parameter names introduced in IBM ILOG CPLEX version 12.9.0

Callable library miscellaneous routines

CPXPARAM_Read_WarningLimit	1157
CPXPARAM_MultiObjective_Display	1600
CPXPARAM_Preprocessing_Folding	1164

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

## See Also

[return\\_codeCPLEX](#), [status\\_codeCPLEX](#), [getParmValCPLEX](#)

---

cplexError-class      *Class "cplexError"*

---

## Description

Objects of class `cpxerr` are returned by various functions of **cplexAPI**, in order to distinguish a status (error) code from a successful result.

## Objects from the Class

Objects can be created by calls of the form `cplexError(err)`, with `err` being an error code of IBM ILOG CPLEX.

## Slots

`errnum`: Object of class "integer" containing the error code.

## Methods

**err** signature(object = "cplexError"): Prints an error message string corresponding to the error code.

**errmsg** signature(object = "cplexError"): Returns an error message string corresponding to the error code.

**errnum** signature(object = "cplexError"): Gets the error code.

**errnum<-** signature(object = "cplexError"): Sets the error code.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

cplexPtr-class      *Class "cplexPtr"*

---

### Description

Structure of the class "cplexPtr". Objects of that class are used to hold pointers to C structures used by IBM ILOG CPLEX.

### Objects from the Class

Objects can be created by calls of the form  
 env <- openEnvCPLEX() and/or  
 prob <- initProbCPLEX(env).

### Slots

cplexPtrType: Object of class "character" giving the pointer type.  
 cplexPointer: Object of class "externalPtr" containing the pointer to a C structure.

### Methods

**isCPLEXchanPointer** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a pointer to a CPLEX channel, otherwise FALSE.

**isCPLEXenvPointer** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a pointer to a CPLEX environment, otherwise FALSE.

**isCPLEXfilePointer** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a pointer to a CPLEX file, otherwise FALSE.

**isCPLEXprobPointer** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a pointer to a CPLEX problem object, otherwise FALSE.

**isCPLEXtermPointer** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a pointer to a CPLEX termination signal, otherwise FALSE.

**isNULLpointerCPLEX** signature(object = "cplexPtr"): returns TRUE if cplexPointer(object) is a NULL pointer, otherwise FALSE.

**cplexPointer** signature(object = "cplexPtr"): gets the cplexPointer slot.

**summary** signature(object = "cplexPtr"): prints a summary of the problem object to the command line. If a solution is available, it prints also information retrieved by [solutionCPLEX](#) and [solnInfoCPLEX](#). If no solution is available, it prints the corresponding error message. The method returns invisibly NULL. The CPLEX environment pointer is needed as second argument env to summary.

**cplexPtrType** signature(object = "cplexPtr"): gets the cplexPtrType slot.

**cplexPtrType<-** signature(object = "cplexPtr"): sets the cplexPtrType slot.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[openEnvCPLEX](#) and [initProbCPLEX](#)

---

delColsCPLEX

*Delete all Columns in a Specified Range*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXdelcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
delColsCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Integer value, numeric index of the first column to be deleted.
end	Integer value, numeric index of the last column to be deleted.

**Details**

Interface to the C function delCols which calls the CPLEX function CPXdelcols.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delFpDestCPLEX	<i>Remove a File from the List of Message Destinations for a Channel</i>
----------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXdelFpdest. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXdelFpdest has been removed.

**Usage**

```
delFpDestCPLEX(env, newch, cpfile)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
newch	A pointer to the channel for which destinations are to be deleted as returned by <a href="#">CPXaddchannel</a> .
cpfile	Pointer to an IBM ILOG CPLEX file as returned by <a href="#">openFileCPLEX</a> .

**Details**

Interface to the C function delFpDest which calls the CPLEX function CPXdelFpdest.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[addFpDestCPLEX](#)

---

delIndConstrsCPLEX      *Delete a Range of Indicator Constraints*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelindconstrs. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delIndConstrsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer that specifies the numeric index of the first indicator constraint to be deleted.
end	An integer that specifies the numeric index of the last indicator constraint to be deleted.

### Details

Interface to the C function `delIndConstrs` which calls the CPLEX function `CPXdelindconstrs`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delMIPstartsCPLEX      *Delete a Range MIP Starts*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelmipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delMIPstartsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the numeric index of the first MIP start to be deleted.
end	An integer specifying the numeric index of the last MIP start to be deleted.

### Details

Interface to the C function delMIPstarts which calls the CPLEX function CPXdelmipstarts.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delNamesCPLEX	<i>Remove all Names Assigned to Rows and Columns</i>
---------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelnames. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delNamesCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function delNames which calls the CPLEX function CPXdelnames.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`delProbCPLEX`*Remove Specified CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXfreeprob. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
delProbCPLEX(env, lp)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `delProb` which calls the CPLEX function `CPXfreeprob`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[initProbCPLEX](#)

---

delQConstrsCPLEX      *Delete a Range of Quadratic Constraints*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelqconstrs. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delQConstrsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer that specifies the numeric index of the first quadratic constraint to be deleted.
end	An integer that specifies the numeric index of the last quadratic constraint to be deleted.

### Details

Interface to the C function `delQConstrs` which calls the CPLEX function `CPXdelqconstrs`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delRowsCPLEX	<i>Delete a Range of Rows</i>
--------------	-------------------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delRowsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Integer value, numeric index of the first row to be deleted.
end	Integer value, numeric index of the last row to be deleted.

### Details

Interface to the C function delRows which calls the CPLEX function CPXdelrows.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delSetColsCPLEX	<i>Delete a Set of Columns</i>
-----------------	--------------------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelsetcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delSetColsCPLEX(env, lp, delstat)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
delstat	An array specifying the columns to be deleted.

### Details

Interface to the C function `delSetCols` which calls the CPLEX function `CPXdelsetcols`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delSetRowsCPLEX      *Delete a Set of Rows*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXdelsetrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delSetRowsCPLEX(env, lp, delstat)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
delstat	An array specifying the rows to be deleted.

### Details

Interface to the C function `delSetRows` which calls the CPLEX function `CPXdelsetrows`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

delTerminateCPLEX      *Terminate CPLEX gracefully*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetterminate. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
delTerminateCPLEX(env, tsig)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
tsig	Pointer to termination signal as returned by <a href="#">setTerminateCPLEX</a> .

### Details

Interface to the C function setTerminate which calls the CPLEX function CPXsetterminate.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[setTerminateCPLEX](#), [printTerminateCPLEX](#), [chgTerminateCPLEX](#)

---

`disconnectChannelCPLEX`*Flush all Message Destinations Associated with a Channel*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXdisconnectchannel`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
disconnectChannelCPLEX(env, newch)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>newch</code>	A pointer to the channel containing the message destinations as returned by <code>CPXaddchannel</code> .

**Details**

Interface to the C function `disconnectChannel` which calls the CPLEX function `CPXdisconnectchannel`.

**Value**

NULL

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[flushChannelCPLEX](#), [flushStdChannelsCPLEX](#), [getChannelsCPLEX](#)

---

`dualoptCPLEX`*Find a Problem Solution Using the Dual Simplex Algorithm*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXdualopt`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
dualoptCPLEX(env, lp)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `dualopt` which calls the CPLEX function `CPXdualopt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[solnInfoCPLEX](#), [getStatCPLEX](#), [solutionCPLEX](#)

---

`dualWriteCPLEX`*Write a Dual Formulation of the Current CPLEX Problem Object*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXdualwrite`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
dualWriteCPLEX(env, lp, fname)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>fname</code>	Single character value giving the filename to write to.

**Details**

Interface to the C function `dualWrite` which calls the CPLEX function `CPXdualwrite`.

**Value**

Zero if successful, otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

feasOptCPLEX	<i>Compute a Minimum-Cost Relaxation</i>
--------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXfeasopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
feasOptCPLEX(env, lp, rhs = FALSE, rng = FALSE, lb = FALSE, ub = FALSE)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
rhs	If set to FALSE no right hand side value is allowed to be relaxed.
rng	If set to FALSE no range values are allowed to be relaxed.
lb	If set to FALSE no lower bound of any variable is allowed to be relaxed.
ub	If set to FALSE no upper bound of any variable is allowed to be relaxed.

### Details

Interface to the C function `feas0pt` which calls the CPLEX function `CPXfeasopt`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[solutionCPLEX](#), [getRowInfeasCPLEX](#), [getColInfeasCPLEX](#), [solnInfoCPLEX](#), [getStatCPLEX](#)

---

fileputCPLEX	<i>Write to File</i>
--------------	----------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXfputs. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXfputs has been removed.

### Usage

```
fileputCPLEX(cpfile, stuff = "")
```

### Arguments

cpfile	A pointer to a file as returned by <a href="#">openFileCPLEX</a> .
stuff	A character string to be written to the file.

### Details

Interface to the C function fileput which calls the CPLEX function CPXfputs.

### Value

A nonnegative value if successful, otherwise EOF.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[closeFileCPLEX](#), [openFileCPLEX](#)

---

flushChannelCPLEX      *Flush All Message Destinations Associated With a Channel*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXflushchannel. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
flushChannelCPLEX(env, newch)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
newch	Pointer to a channel object as returned by <a href="#">addChannelCPLEX</a> .

### Details

Interface to the C function flushChannel which calls the CPLEX function CPXflushchannel.

### Value

NULL

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[disconnectChannelCPLEX](#), [flushStdChannelsCPLEX](#), [getChannelsCPLEX](#)

---

flushStdChannelsCPLEX *Flushes the Output Buffers of the Four Standard Channels*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXflushstdchannels. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
flushStdChannelsCPLEX(env)
```

### Arguments

env            An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

### Details

Interface to the C function flushStdChannels which calls the CPLEX function CPXflushstdchannels.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[disconnectChannelCPLEX](#), [flushChannelCPLEX](#), [getChannelsCPLEX](#)

---

freePresolveCPLEX      *Free Presolved Problem From the LP Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXfreepresolve. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
freePresolveCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function freePresolve which calls the CPLEX function CPXfreepresolve.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`getBaseCPLEX`*Access Basis Resident in a CPLEX Problem Object.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXgetbase`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getBaseCPLEX(env, lp)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `getBase` which calls the CPLEX function `CPXgetbase`.

**Value**

If successful a list is returned:

<code>cstat</code>	basis status of the columns in the CPLEX problem object
<code>rstat</code>	basis status of the artificial, slack, or surplus variable associated with each row in the constraint matrix

otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getBestObjValCPLEX      *Access the Currently Best Known Bound of all the Remaining Open Nodes in a Branch-And-Cut Tree*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetbestobjval. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getBestObjValCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getBestObjVal` which calls the CPLEX function `CPXgetbestobjval`.

### Value

Objective value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getChannelsCPLEX      *Obtain Pointers to the Four Default Channels*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetchannels. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getChannelsCPLEX(env, ptrtype = "cplex_chan")
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
ptrtype	A name for the pointer object.

### Details

Interface to the C function `getChannels` which calls the CPLEX function `CPXgetchannels`.

### Value

If successful a list is returned:

cpxresults	address of the channel corresponding to cpxresults
cpxwarning	address of the channel corresponding to cpxwarning
cpxerror	address of the channel corresponding to cpxerror
cpxlog	address of the channel corresponding to cpxlog

otherwise an instance of class "cplexError". Each list element is an object of class "cplexPtr".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[disconnectChannelCPLEX](#), [flushChannelCPLEX](#), [flushStdChannelsCPLEX](#)

---

getChgParmCPLEX	<i>Get Parameter Numbers for Parameters Which are Not Set at Their Default Values</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetchgparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getChgParmCPLEX(env)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
-----	---

### Details

Interface to the C function getChgParm which calls the CPLEX function CPXgetchgparam.

### Value

A vector containing integer values (unique parameter identifiers) for parameters which are not set at their default values, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getCoefCPLEX	<i>Access a Single Constraint Matrix Coefficient</i>
--------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcoef. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getCoefCPLEX(env, lp, i, j)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
i	An integer specifying the numeric index of the row.
j	An integer specifying the numeric index of the column.

### Details

Interface to the C function `getCoef` which calls the CPLEX function `CPXgetcoef`.

### Value

Matrix coefficient value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getColIndexCPLEX	<i>Search for the Index Number of the Specified Column</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcolindex. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getColIndexCPLEX(env, lp, cname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
cname	A column name to search for.

### Details

Interface to the C function `getColIndex` which calls the CPLEX function `CPXgetcolindex`.

### Value

Column number if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getColInfeasCPLEX      *Compute Infeasibility of a Given Solution for a Range of Variables*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcolinfeas. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getColInfeasCPLEX(env, lp, begin, end, sol = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of variables whose infeasibility is to be returned.
end	An integer specifying the end of the range of variables whose infeasibility is to be returned.
sol	The solution whose infeasibility is to be computed.

### Details

Interface to the C function `getColInfeas` which calls the CPLEX function `CPXgetcolinfeas`.

### Value

infeasibility values if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

getColNameCPLEX	<i>Access a Range of Column Names</i>
-----------------	---------------------------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcolname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getColNameCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of column names to be returned.
end	An integer specifying the end of the range of column names to be returned.

### Details

Interface to the C function getColName which calls the CPLEX function CPXgetcolname.

### Value

Column names if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getColsCPLEX	<i>Accesses a Range of Columns of the Constraint Matrix</i>
--------------	---

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getColsCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of columns to be returned.
end	An integer specifying the end of the range of columns to be returned.

**Details**

Interface to the C function getCols which calls the CPLEX function CPXgetcols.

**Value**

If successful a list is returned:

matbeg	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getColTypeCPLEX      *Access Types for a Range of Variables*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcctype. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getColTypeCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of the types to be returned.
end	An integer specifying the end of the range of the types to be returned.

### Details

Interface to the C function getColType which calls the CPLEX function CPXgetcctype.

### Value

Column types if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getConflictCPLEX      *Return Linear Constraints and Variables Belonging to a Conflict*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetconflict. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getConflictCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getConflict` which calls the CPLEX function `CPXgetconflict`.

### Value

If successful a list is returned:

confstat	status of the conflict
confnumrows	number of rows in the conflict
rowind	indices of the constraints that participate in the conflict
rowbdstat	conflict status of the rows
confnumcols	number of columns in the conflict
colind	indices of the variables that participate in the conflict
colbdstat	conflict status of the columns

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**[cplexConstants](#)

---

`getConflictExtCPLEX`    *Get Conflict Status Codes*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetconflicttext. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getConflictExtCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class " <a href="#">cplexPtr</a> " as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class " <a href="#">cplexPtr</a> " as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	The index of the first group.
end	The index of the last group.

**Details**

Interface to the C function `getConflictExt` which calls the CPLEX function `CPXgetconflicttext`.

**Value**

Specified values denoting the conflict status if successful, otherwise an instance of class "[cplexError](#)".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getCutoffCPLEX	<i>Access MIP Cutoff Value Being Used During Mixed Integer Optimization.</i>
----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetcutoff. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getCutoffCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getCutoff` which calls the CPLEX function `CPXgetcutoff`.

### Value

Value of the cutoff if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getDblParmCPLEX	<i>Obtain the Current Value of a CPLEX Parameter of Type Double</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetdblparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getDblParmCPLEX(env, parm)
```

### Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

### Details

Interface to the C function `getDblParm` which calls the CPLEX function `CPXgetdblparam`.

### Value

Parameter value if successful, otherwise an instance of class "`cplexError`".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getDbQualCPLEX	<i>Access Double-Valued Information About the Quality of the Current Solution of a Problem</i>
----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetdblquality. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getDbQualCPLEX(env, lp, w)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
w	An Integer specifying the quality value to be retrieved.

### Details

Interface to the C function `getDbQual` which calls the CPLEX function `CPXgetdblquality`.

### Value

Requested quality value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getDbsCntCPLEX	<i>Access the Number of Dual Super-Basic Variables in the Current Solution</i>
----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetdsbcnt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getDbsCntCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getDbsCnt` which calls the CPLEX function `CPXgetdsbcnt`.

### Value

Number of dual super-basic variables if a solution exists, otherwise zero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

getDjCPLEX	<i>Accesses Reduced Costs for a Range of Variables of a Linear or Quadratic Program</i>
------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetdj. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getDjCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of reduced-cost values to be returned.
end	An integer specifying the end of the range of reduced-costs values to be returned.

### Details

Interface to the C function getDj which calls the CPLEX function CPXgetdj.

### Value

Reduced costs if successful, otherwise an instance of class "[cplexError](#)".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getErrorStrCPLEX      *Return an Error Message String Corresponding to an Error Code*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgeterrorstring. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getErrorStrCPLEX(err, env = NULL)
```

### Arguments

err	The error code to be translated.
env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.

### Details

Interface to the C function getErrorStr which calls the CPLEX function CPXgeterrorstring.

### Value

A single character value containing the error message string.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getStatStrCPLEX](#)

---

getGradCPLEX	<i>Project the Impact of Making Changes to Optimal Variable Values or Objective Function Coefficients</i>
--------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetgrad. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getGradCPLEX(env, lp, j)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
j	An integer specifying the index of the column of interest.

### Details

Interface to the C function getGrad which calls the CPLEX function CPXgetgrad.

### Value

If successful a list is returned:

head	listing of the indices of the basic variables in the order in which they appear in the basis.
y	coefficients of the j-th column relative to the current basis.

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getIndConstrCPLEX	<i>Access a Specified Indicator Constraint on the Variables of a CPLEX Problem Object.</i>
-------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetindconstr. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getIndConstrCPLEX(env, lp, which)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
which	An integer specifying which indicator constraint to return.

### Details

Interface to the C function `getIndConstr` which calls the CPLEX function `CPXgetindconstr`.

### Value

If successful a list is returned:

indvar	Index of the binary indicator variable. Consult the IBM ILOG CPLEX documentation for more detailed information.
complemented	Boolean value that specifies whether the indicator variable is complemented. Consult the IBM ILOG CPLEX documentation for more detailed information.
rhs	Righthand side value of the linear portion of the indicator constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.
sense	Sense of the linear portion of the constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.
linind	Variable indices of the entries of <code>linval</code> . Consult the IBM ILOG CPLEX documentation for more detailed information.
linval	Coefficients of the linear portion of the specified indicator constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "[cplexError](#)".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getInfoDb1ParmCPLEX    *Obtain Default, Minimum and Maximum Values of a Parameter of Type Double*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXinfodblparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getInfoDb1ParmCPLEX(env, parm)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

**Details**

Interface to the C function getInfoDb1Parm which calls the CPLEX function CPXinfodblparam.

**Value**

If successful a list is returned:

defvalue	default value
minvalue	minimum value
maxvalue	maximum value

otherwise an instance of class "[cplexError](#)".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

## See Also

[cplexConstants](#)

---

getInfoIntParmCPLEX	<i>Obtain Default, Minimum and Maximum Values of a Parameter of Type CPXINT</i>
---------------------	---

---

## Description

Low level interface function to the IBM ILOG CPLEX function CPXinfointparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

## Usage

```
getInfoIntParmCPLEX(env, parm)
```

## Arguments

env	An object of class " <a href="#">cplexPtr</a> " as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

## Details

Interface to the C function `getInfoIntParm` which calls the CPLEX function `CPXinfointparam`.

## Value

If successful a list is returned:

defvalue	default value
minvalue	minimum value
maxvalue	maximum value

otherwise an instance of class "[cplexError](#)".

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#)

---

getInfoLongParmCPLEX    *Obtain Default, Minimum and Maximum Values of a Parameter of Type CPXLONG*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXinfolongparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getInfoLongParmCPLEX(env, parm)
```

**Arguments**

env	An object of class " <a href="#">cplexPtr</a> " as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

**Details**

Interface to the C function `getInfoLongParm` which calls the CPLEX function `CPXinfolongparam`.

**Value**

If successful a list is returned:

defvalue	default value
minvalue	minimum value
maxvalue	maximum value

otherwise an instance of class "[cplexError](#)".

**Note**

In order to get a 64 bit integer value from `CPXinfolongparam`, datatype `numeric` is used. All return values will be numeric.

**Author(s)**

Gabriel Gelius-Dietrich <[geliudie@uni-duesseldorf.de](mailto:geliudie@uni-duesseldorf.de)>

Maintainer: Mayo Roettger <[mayo.roettger@hhu.de](mailto:mayo.roettger@hhu.de)>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[getInfoIntParmCPLEX](#), [cplexConstants](#)

---

getInfoStrParmCPLEX    *Obtain Default Value of a String Parameter*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXinfostrparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getInfoStrParmCPLEX(env, parm)
```

**Arguments**

env	An object of class " <a href="#">cplexPtr</a> " as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

**Details**

Interface to the C function `getInfoStrParm` which calls the CPLEX function `CPXinfostrparam`.

**Value**

A single character value.

**Author(s)**

Gabriel Gelius-Dietrich <[geljudie@uni-duesseldorf.de](mailto:geljudie@uni-duesseldorf.de)>

Maintainer: Mayo Roettger <[mayo.roettger@hhu.de](mailto:mayo.roettger@hhu.de)>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#)

---

getIntParmCPLEX	<i>Obtain the Current Value of a CPLEX Parameter of Type CPXINT</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetintparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getIntParmCPLEX(env, parm)
```

### Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

### Details

Interface to the C function `getIntParm` which calls the CPLEX function `CPXgetintparam`.

### Value

Parameter value if successful, otherwise an instance of class "`cplexError`".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getIntQualCPLEX	<i>Access Integer-Valued Information About the Quality of the Current Solution of a Problem</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetintquality. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getIntQualCPLEX(env, lp, w)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
w	An Integer specifying the quality value to be retrieved.

### Details

Interface to the C function `getIntQual` which calls the CPLEX function `CPXgetintquality`.

### Value

Requested quality value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getItCntCPLEX	<i>Access the Total Number of Simplex Iterations to Solve an LP Problem</i>
---------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function `CPXgetitcnt`. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getItCntCPLEX(env, lp)
```

### Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getItCnt` which calls the CPLEX function `CPXgetitcnt`.

### Value

Total iteration count if solution exists, otherwise zero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getLogFileCPLEX	<i>Access log file to Which Messages are Written</i>
-----------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetlogfile. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXgetlogfile has been removed.

**Usage**

```
getLogFileCPLEX(env, ptrtype = "cplex_file")
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
ptrtype	A name for the pointer object.

**Details**

Interface to the C function getLogFile which calls the CPLEX function CPXgetlogfile.

**Value**

If successful, a pointer to the CPLEX file is returned (an instance of class "cplexPtr"), otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[setLogFileCPLEX](#)

---

getLogFileNameCPLEX     *Get the name of the current logfile*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetlogfile. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality for IBM ILOG CPLEX < 12.8.0, where CPXgetlogfile was not included.

### Usage

```
getLogFileNameCPLEX(env)
```

### Arguments

env                    An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

### Details

Interface to the C function getLogFileName which calls the CPLEX function CPXgetlogfile.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

Mayo Roettger <mayo.roettger@hhu.de>

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getLongParmCPLEX	<i>Obtain Current Value of a Parameter of Type CPXLONG</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetlongparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getLongParmCPLEX(env, parm)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

### Details

Interface to the C function getLongParm which calls the CPLEX function CPXgetlongparam.

### Value

Parameter value if successful, otherwise an instance of class "cplexError".

### Note

In order to get a 64 bit integer value from CPXgetlongparam, datatype numeric is used. The return value will be numeric.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getIntParmCPLEX](#), [cplexConstants](#)

---

getLowBndsIdsCPLEX      *Retrieve Lower Bounds on Variables*

---

### Description

The function retrieves the lower bounds on specified variables.

### Usage

```
getLowBndsIdsCPLEX(env, lp, ind)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ind	Column indices of variables (remember: first index is 0).

### Value

A numeric vector containing the lower bounds on the specified variables. If not successful an instance of class "cplexError" is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[getLowerBndsCPLEX](#)

---

getLowerBndsCPLEX      *Access a Range of Lower Bounds on Variables*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetlb. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getLowerBndsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Beginning of the range of lower bounds to be returned.
end	End of the range of lower bounds to be returned.

### Details

Interface to the C function `getLowerBnds` which calls the CPLEX function `CPXgetlb`.

### Value

A numeric vector containing the lower bounds on the specified variables. If not successful an instance of class "cplexError" is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getMethodCPLEX      *Obtain Solution Algorithm*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetmethod. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getMethodCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getMethod` which calls the CPLEX function `CPXgetmethod`.

### Value

A single integer value specifying the solution algorithm.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

`cplexConstants` section "LP/QP solution algorithms".

---

getMIPrelGapCPLEX      *Access Relative Objective Gap for a MIP Optimization*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetmiprelgap. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getMIPrelGapCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getMIPrelGap which calls the CPLEX function CPXgetmiprelgap.

### Value

Relative Objective Gap if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getObjValCPLEX](#), [getBestObjValCPLEX](#)

---

getMIPstartIndexCPLEX *Search for the Index Number of the Specified MIP Start*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetmipstartindex. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getMIPstartIndexCPLEX(env, lp, iname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
iname	A MIP start name to search for.

### Details

Interface to the C function `getMIPstartIndex` which calls the CPLEX function `CPXgetmipstartindex`.

### Value

Index number of the specified MIP start if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getMIPstartNameCPLEX *Access a Range of Names of MIP Starts*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetmipstartname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getMIPstartNameCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of MIP starts to be returned.
end	An integer specifying the end of the range of MIP starts to be returned.

### Details

Interface to the C function `getMIPstartName` which calls the CPLEX function `CPXgetmipstartname`.

### Value

Names of the MIP starts if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getMIPstartsCPLEX      *Access a Range of MIP Starts of a CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetmipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getMIPstartsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of MIP starts to be returned.
end	An integer specifying the end of the range of MIP starts to be returned.

### Details

Interface to the C function `getMIPstarts` which calls the CPLEX function `CPXgetmipstarts`.

### Value

If successful a list is returned:

beg	Array specifying where each of the requested MIP starts begins in the arrays <code>varindices</code> and <code>values</code> . Consult the IBM ILOG CPLEX documentation for more detailed information.
varindices	Array containing the numeric indices of the columns corresponding to the variables which are assigned starting values. Consult the IBM ILOG CPLEX documentation for more detailed information.
values	Array containing the values of the MIP starts. Consult the IBM ILOG CPLEX documentation for more detailed information.
effortlevel	Array containing the effort level for each MIP start requested. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumColsCPLEX

*Access the Number of Columns in the Constraint Matrix*

---

## Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

## Usage

```
getNumColsCPLEX(env, lp)
```

## Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

## Details

Interface to the C function `getNumCols` which calls the CPLEX function `CPXgetnumcols`.

## Value

If successful the number of variables is returned. If env or lp do not exist, zero is returned.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumMIPstartsCPLEX *Access the Number of MIP Starts in the CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnummipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumMIPstartsCPLEX(env, lp)
```

### Arguments

- |     |   |
|-----|---|
| env | An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.     |
| lp  | An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object. |

### Details

Interface to the C function `getNumMIPstarts` which calls the CPLEX function `CPXgetnummipstarts`.

### Value

If successful the number of MIP starts is returned. If env or lp do not exist, zero is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumNnzCPLEX	<i>Access the Number of Nonzero Elements in the Constraint Matrix</i>
----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumnz. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumNnzCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getNumNnz` which calls the CPLEX function `CPXgetnumnz`.

### Value

Zero if the problem object or environment does not exist, otherwise the number of nonzero elements.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumQConstrsCplex    *Return the Number of quadratic constraints.*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumqconstrs. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumQConstrsCplex(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCplex</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCplex</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getNumQConstrs` which calls the CPLEX function `CPXgetnumqconstrs`.

### Value

If successful the number of quadratic constraints is returned. If `env` or `lp` do not exist, zero is returned.

### Author(s)

Claus Jonathan Fritzeimer <clausjonathan.fritzeimer@uni-duesseldorf.de>

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumQPnzCPLEX	<i>Return the Number of Nonzeros in the Q Matrix</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumqpnz. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumQPnzCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getNumQPnz` which calls the CPLEX function `CPXgetnumqpnz`.

### Value

If successful the number of nonzeros in the Q matrix is returned. If env or lp do not exist, zero is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

---

getNumQuadCPLEX	<i>Return the Number of Variables That Have Quadratic Objective Coefficients</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumquad. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumQuadCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getNumQuad` which calls the CPLEX function `CPXgetnumquad`.

### Value

If successful the number of variables that have quadratic objective coefficients is returned. If env or lp do not exist, zero is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getNumRowsCPLEX	<i>Access the Number of Rows in the Constraint Matrix</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetnumcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getNumRowsCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getNumRows` which calls the CPLEX function `CPXgetnumrows`.

### Value

If successful the number of rows is returned. If env or lp do not exist, zero is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getObjCPLEX	<i>Access a Range of Objective Function Coefficients of a CPLEX Problem Object</i>
-------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetobj. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getObjCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of objective function coefficients to be returned
end	An integer specifying the end of the range of objective function coefficients to be returned.

### Details

Interface to the C function getObj which calls the CPLEX function CPXgetobj.

### Value

Specified objective coefficients if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getObjDirCPLEX      *Access the Direction of Optimization*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetobjsen. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getObjDirCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getObjDir` which calls the CPLEX function `CPXgetobjsen`.

### Value

Zero if the problem object or environment does not exist, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getObjNameCPLEX	<i>Access the Name of the Objective Row of a CPLEX Problem Object</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetobjname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getObjNameCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getObjName which calls the CPLEX function CPXgetobjname.

### Value

Name of the objective row if successful, otherwise an instance of class "[cplexError](#)".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getObjOffsetCPLEX	<i>Objective Offset Between the Original Problem and the Presolved Problem.</i>
-------------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetobjoffset. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getObjOffsetCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getObjOffset` which calls the CPLEX function `CPXgetobjoffset`.

### Value

Objective offset value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getObjValCPLEX	<i>Access Solution Objective Value</i>
----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetobjval. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getObjValCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getObjVal` which calls the CPLEX function `CPXgetobjval`.

### Value

Objective value if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getOrderCPLEX	<i>Access MIP Priority Order Information</i>
---------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetorder. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getOrderCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getOrder` which calls the CPLEX function `CPXgetorder`.

### Value

If successful a list is returned:

indices	indices of the variables in the order
priority	priority values
direction	preferred branching directions

otherwise an instance of class "cplexError".

### Author(s)

Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>  
Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getParmHierNameCPLEX *Obtain the hierarchy name string of a CPLEX parameter*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetparamhiername. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality for IBM ILOG CPLEX < 12.9.0 on, where CPXgetparamhiername was not included.

### Usage

```
getParmHierNameCPLEX(env, whichparam)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
whichparam	An integer specifying the symbolic constant (or reference number) of the desired parameter.

### Details

Interface to the C function getParmHierName which calls the CPLEX function CPXgetparamhiername.

### Value

A single character value.

### Author(s)

Mayo Roettger <mayo.roettger@hhu.de>

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getParmNameCPLEX	<i>Obtain the Name of a CPLEX Parameter, Given the Symbolic Constant</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetparamname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getParmNameCPLEX(env, wparm)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
wparm	Constant or reference number of the desired parameter.

### Details

Interface to the C function getParmName which calls the CPLEX function CPXgetparamname.

### Value

A single character value.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getParmNumCPLEX	<i>Obtain the Reference Number of a CPLEX Parameter</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetparamnum. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getParmNumCPLEX(env, nparam)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
nparam	A single character value containing the name of the parameter.

### Details

Interface to the C function getParmNum which calls the CPLEX function CPXgetparamnum.

### Value

A single integer value.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[cplexConstants](#)

---

getParmTypeCPLEX      *Obtain the Type of a CPLEX Parameter*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetparamtype. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getParmTypeCPLEX(env, parm)
```

### Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

### Details

Interface to the C function `getParmType` which calls the CPLEX function `CPXgetparamtype`.

### Value

A single integer value if successful, otherwise an instance of class "`cplexError`".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[cplexConstants](#)

---

*getParmValCPLEX*      *Values and Names of Parameters Having Non-Default Values*

---

**Description**

The function `getParmValCPLEX` retrieves the names and actual values of all IBM ILOG CPLEX parameters, which do not have their default values.

**Usage**

```
getParmValCPLEX(env)
```

**Arguments**

`env`      An object of class "`cplexPtr`" as returned by `openEnvCPLEX`. This is basically a pointer to an IBM ILOG CPLEX environment.

**Value**

Either a list containing all non-default parameters and their values or `NULL`.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#) and [getChgParmCPLEX](#)

---

*getPhase1CntCPLEX*      *Access Number of Phase I Iterations*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXgetphase1cnt`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getPhase1CntCPLEX(env, lp)
```

**Arguments**

- env            An object of class "cplexPtr" as returned by `openEnvCplex`. This is basically a pointer to an IBM ILOG CPLEX environment.
- lp             An object of class "cplexPtr" as returned by `initProbCplex`. This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `getPhase1Cnt` which calls the CPLEX function `CPXgetphase1cnt`.

**Value**

Zero if no solution exists, otherwise Phase I iteration count.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getPiCplex

*Access Dual Values for a Range of Constraints*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXgetpi`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getPiCplex(env, lp, begin, end)
```

**Arguments**

- env            An object of class "cplexPtr" as returned by `openEnvCplex`. This is basically a pointer to an IBM ILOG CPLEX environment.
- lp             An object of class "cplexPtr" as returned by `initProbCplex`. This is basically a pointer to an IBM ILOG CPLEX problem object.
- begin          An integer specifying the beginning of the range of dual values to be returned.
- end            An integer specifying the end of the range of dual values to be returned.

**Details**

Interface to the C function `getPi` which calls the CPLEX function `CPXgetpi`.

**Value**

Values of the dual variables if successful, otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getPreStatCPLEX

*Access Presolve Status Information for Columns and Rows*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXgetprestat`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getPreStatCPLEX(env, lp)
```

**Arguments**

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `getPreStat` which calls the CPLEX function `CPXgetprestat`.

**Value**

If successful a list is returned:

prestat	status of the presolved problem
pcstat	presolve status values of the columns
prstat	presolve status values of the rows
ocstat	presolve status values of the columns of the presolved problem
orstat	presolve status values of the rows of the presolved problem

otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#)

---

getProbNameCPLEX      *Access Problem Name*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetprobname. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getProbNameCPLEX(env, lp)
```

**Arguments**

env            An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

lp             An object of class "cplexPtr" as returned by [initProbCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function getProbName which calls the CPLEX function CPXgetprobname.

**Value**

Name of the problem if successful, otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getProbTypeCPLEX      *Access Problem Type*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetprobtype. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getProbTypeCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getProbType which calls the CPLEX function CPXgetprobtype.

### Value

A single integer value specifying the problem type.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[chgProbTypeCPLEX](#), [cplexConstants](#) section "Problem Types".

---

getProbVarCPLEX      *Access the Solution Values for a Range of Problem Variables*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetx. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getProbVarCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of variable values to be returned.
end	An integer specifying the end of the range of variable values to be returned.

### Details

Interface to the C function `getProbVar` which calls the CPLEX function `CPXgetx`.

### Value

Values of the primal variables if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getQConstrCPLEX	<i>Access a Specified Quadratic Constraint on the Variables of a CPLEX Problem Object.</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetqconstr. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getQConstrCPLEX(env, lp, which)
```

### Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
which	An integer specifying which quadratic constraint to return.

### Details

Interface to the C function `getQConstr` which calls the CPLEX function `CPXgetqconstr`.

### Value

If successful a list is returned:

rhs	Righthand-side value of the quadratic constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.
sense	Character specifying the sense of the constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.
linind	Variable indices of the entries of <code>linval</code> . Consult the IBM ILOG CPLEX documentation for more detailed information.
linval	Linear coefficients of the specified constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.
quadrow	Variable indices of the entries of <code>quadval</code> . Consult the IBM ILOG CPLEX documentation for more detailed information.
quadcol	Variable indices of the entries of <code>quadval</code> . Consult the IBM ILOG CPLEX documentation for more detailed information.
quadval	Quadratic coefficients of the specified constraint. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getQPcoefCPLEX

*Access the Quadratic Coefficient in the Matrix Q*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetqpcoef. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getQPcoefCPLEX(env, lp, i, j)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
i	The row number in Q.
j	The row column in Q.

**Details**

Interface to the C function `getQPcoef` which calls the CPLEX function `CPXgetqpcoef`.

**Value**

Specified quadratic coefficient in the matrix Q if successful, otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getQuadCPLEX	<i>Access a Range of Columns of the Matrix <math>Q</math> of a Model With a Quadratic Objective Function</i>
--------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetquad. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getQuadCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of columns to be returned.
end	An integer specifying the end of the range of columns to be returned.

**Details**

Interface to the C function getQuad which calls the CPLEX function CPXgetquad.

**Value**

If successful a list is returned:

qmatbeg	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.
qmatind	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.
qmatval	Array that specifies the nonzero elements of the columns. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRedLpCPLEX                      *Get a Pointer for the Presolved Problem*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetredlp. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getRedLpCPLEX(env, lp, ptrtype = "cplex_prob")
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ptrtype	A name for the pointer object.

### Details

Interface to the C function `getRedLp` which calls the CPLEX function `CPXgetredlp`.

### Value

Pointer for the presolved problem if successful (an instance of class "cplexPtr"), otherwise an instance of class "cplexError" or NULL.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`getRhsCPLEX`*Access Righthand Side Coefficients for a Range of Constraints*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetrhs. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getRhsCPLEX(env, lp, begin, end)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>begin</code>	An integer specifying the beginning of the range of righthand side terms to be returned.
<code>end</code>	An integer specifying the end of the range of righthand side terms to be returned.

**Details**

Interface to the C function `getRhs` which calls the CPLEX function `CPXgetrhs`.

**Value**

Specified righthand side coefficients if successful, otherwise an instance of class "`cplexError`".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRngValCPLEX	<i>Accesses Righthand Side Coefficients Range Coefficients</i>
----------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetrngval. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getRngValCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the set of rows for which RHS range coefficients are returned.
end	An integer specifying the end of the set of rows for which RHS range coefficients are returned.

**Details**

Interface to the C function `getRngVal` which calls the CPLEX function `CPXgetrngval`.

**Value**

Specified RHS range coefficients if successful, otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRowIndexCPLEX	<i>Search for the Index Number of a Specified Row</i>
------------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetrowindex. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getRowIndexCPLEX(env, lp, rname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
rname	A row name to search for.

### Details

Interface to the C function `getRowIndex` which calls the CPLEX function `CPXgetrowindex`.

### Value

Specified row index if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRowInfeasCPLEX	<i>Compute Infeasibility of a Given Solution for a Range of Linear Constraints</i>
-------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetrowinfeas. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getRowInfeasCPLEX(env, lp, begin, end, sol = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of linear constraints whose infeasibility is to be returned.
end	An integer specifying the beginning of the range of linear constraints whose infeasibility is to be returned.
sol	The solution whose infeasibility is to be computed.

### Details

Interface to the C function `getRowInfeas` which calls the CPLEX function `CPXgetrowinfeas`.

### Value

Infeasibility values if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRowNameCPLEX	<i>Access a Range of Row Names</i>
-----------------	------------------------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetrowname. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getRowNameCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of row names to be returned.
end	An integer specifying the end of the range of row names to be returned.

### Details

Interface to the C function `getRowName` which calls the CPLEX function `CPXgetrowname`.

### Value

Specified row names if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getRowsCPLEX	<i>Accesses a Range of Rows of the Constraint Matrix</i>
--------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXgetrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getRowsCPLEX(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of rows to be returned.
end	An integer specifying the end of the range of rows to be returned.

**Details**

Interface to the C function `getRows` which calls the CPLEX function `CPXgetrows`.

**Value**

If successful a list is returned:

matbeg	Array that specifies the nonzero elements of the rows. Consult the IBM ILOG CPLEX documentation for more detailed information.
matind	Array that specifies the nonzero elements of the rows. Consult the IBM ILOG CPLEX documentation for more detailed information.
matval	Array that specifies the nonzero elements of the rows. Consult the IBM ILOG CPLEX documentation for more detailed information.

otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getSenseCPLEX	<i>Access the Sense for a Range of Constraints in a CPLEX Problem Object.</i>
---------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetsense. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSenseCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of constraint senses to be returned.
end	An integer specifying the end of the range of constraint senses to be returned.

### Details

Interface to the C function `getSense` which calls the CPLEX function `CPXgetsense`.

### Value

Specified constraint senses if successful, otherwise an instance of class "[cplexError](#)".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getSiftItCntCPLEX      *Access Total Number of Sifting Iterations*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetsiftitcnt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSiftItCntCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `getSiftItCnt` which calls the CPLEX function `CPXgetsiftitcnt`.

### Value

Zero if no solution exists, otherwise nonzero the total iteration count.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getSiftPase1CntCPLEX    *Access Number of Phase I Sifting Iterations*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetsiftphase1cnt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSiftPase1CntCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getSiftPase1Cnt which calls the CPLEX function CPXgetsiftphase1cnt.

### Value

Zero if no solution exists, otherwise nonzero the Phase I iteration count.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getSlackCPLEX	<i>Accesses Slack Values for a Range of Linear Constraints</i>
---------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetslack. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSlackCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	An integer specifying the beginning of the range of slack values to be returned.
end	An integer specifying the end of the range of slack values to be returned.

### Details

Interface to the C function getSlack which calls the CPLEX function CPXgetslack.

### Value

Specified slack or surplus variables if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`getStatCPLEX`*Access the Solution Status of the Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXgetstat`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getStatCPLEX(env, lp)
```

**Arguments**

- |                  |   |
|------------------|---|
| <code>env</code> | An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.     |
| <code>lp</code>  | An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object. |

**Details**

Interface to the C function `getStat` which calls the CPLEX function `CPXgetstat`.

**Value**

A single integer value giving the solution status.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`cplexConstants` section "Values returned for `stat` by solution".

---

getStatStrCPLEX	<i>Return an Status Message String Corresponding to an Status Code</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetstatstring. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getStatStrCPLEX(env, stat)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
stat	The status code to be translated.

### Details

Interface to the C function getStatStr which calls the CPLEX function CPXgetstatstring.

### Value

A single character value containing the status message string.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getErrorStrCPLEX](#)

---

getStrParmCPLEX      *Obtain the Current Value of a CPLEX String Parameter*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetstrparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getStrParmCPLEX(env, parm)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.

### Details

Interface to the C function getStrParm which calls the CPLEX function CPXgetstrparam.

### Value

A single character value.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[cplexConstants](#)

---

getSubMethodCPLEX      *Accesses Solution Method of the Last Subproblem Optimization*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetsubmethod. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSubMethodCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getSubMethod which calls the CPLEX function CPXgetsubmethod.

### Value

Integer value specifying the solution method.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

getSubStatCPLEX	<i>Access Solution Status of the Last Subproblem Optimization</i>
-----------------	---

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetsubstat. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getSubStatCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function getSubStat which calls the CPLEX function CPXgetsubstat.

### Value

Zero if no solution exists, nonzero otherwise.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getTimeCPLEX	<i>Get a Time Stamp</i>
--------------	-------------------------

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXfclose. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getTimeCPLEX(env)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
-----	--

**Details**

Interface to the C function `getTime` which calls the CPLEX function `CPXgetttime`.

**Value**

If successful a single numeric value, otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`fileputCPLEX`, `openFileCPLEX`

---

getUppBndsIdsCPLEX      *Retrieve Upper Bounds on Variables*

---

### Description

The function retrieves the upper bounds on specified variables.

### Usage

```
getUppBndsIdsCPLEX(env, lp, ind)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ind	Column indices of variables (remember: first index is 0).

### Value

A numeric vector containing the upper bounds on the specified variables. If not successful an instance of class "cplexError" is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[getUpperBndsCPLEX](#)

---

getUpperBndsCPLEX      *Access a Range of Upper Bounds on Variables*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXgetub. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
getUpperBndsCPLEX(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Beginning of the range of upper bounds to be returned.
end	End of the range of upper bounds to be returned.

### Details

Interface to the C function `getUpperBnds` which calls the CPLEX function `CPXgetub`.

### Value

A numeric vector containing the lower bounds on the specified variables. If not successful an instance of class "cplexError" is returned.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

getVersionCPLEX      *Get Version Number of the CPLEX Library.*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXversion. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
getVersionCPLEX(env)
```

**Arguments**

env      An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

**Details**

Interface to the C function getVersion which calls the CPLEX function getVersionCPLEX.

**Value**

Single character string specifying the version of the cplex library or NULL if the environment does not exist.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

hybbaroptCPLEX      *Solve the Specified Problem by the CPLEX Barrier Optimizer*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXhybbaropt. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
hybbaroptCPLEX(env, lp, method)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
method	A single integer value giving the crossover method to be implemented.

**Details**

Interface to the C function `hybbaropt` which calls the CPLEX function `CPXhybbaropt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`solnInfoCPLEX`, `getStatCPLEX`, `solutionCPLEX`, `cplexConstants` section "LP/QP solution algorithms".

---

hybnetoptCPLEX

*Use CPLEX Network Optimizer*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXhybnetopt`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

`hybnetoptCPLEX(env, lp, method)`

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
method	A single integer value giving the type of simplex method to follow the network optimization.

**Details**

Interface to the C function `hybnetopt` which calls the CPLEX function `CPXhybnetopt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`solnInfoCPLEX`, `getStatCPLEX`, `solutionCPLEX`, `cplexConstants` section "LP/QP solution algorithms".

---

initProbCPLEX

*Create a CPLEX Problem Object in the CPLEX Environment*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXcreateprob`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
initProbCPLEX(env, pname = "CPLEX_PROB", ptrtype = "cplex_prob")
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
pname	A single character string containing the name of the problem object.
ptrtype	A name for the pointer object.

**Details**

Interface to the C function CPXcreate which calls the CPLEX function CPXcreateprob.

**Value**

If successful, a pointer to the CPLEX problem object is returned (an instance of class "cplexPtr"), otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[delProbCPLEX](#)

---

lpoptCPLEX

*Find a Solution to a Problem Using One of the CPLEX Linear Optimizers*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXlpopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
lpoptCPLEX(env, lp)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function lpopt which calls the CPLEX function CPXlpopt.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[solnInfoCPLEX](#), [getStatCPLEX](#), [solutionCPLEX](#)

---

mipoptCPLEX

*Find a Solution to a Mixed Integer Program*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXmipopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
mipoptCPLEX(env, lp)
```

**Arguments**

env           An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

lp            An object of class "cplexPtr" as returned by [initProbCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function mipopt which calls the CPLEX function CPXmipopt.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[solnInfoCPLEX](#), [getStatCPLEX](#), [solutionCPLEX](#)

---

 newColsCPLEX

---

*Add Empty Columns to a Specified CPLEX Problem Object*


---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXnewcols. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
newColsCPLEX(env, lp, ncols,
             obj = NULL, lb = NULL, ub = NULL,
             xtype = NULL, cnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of variables to add.
obj	Objective function coefficients.
lb	Lower bounds on the new variables.
ub	Upper bounds on the new variables.
xctype	Type of the new variables.
cnames	Names of the new variables.

**Details**

Interface to the C function newCols which calls the CPLEX function CPXnewcols.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

**See Also**

[cplexConstants](#) section “Variable types for ctype array”.

---

 newRowsCPLEX

---

*Add Empty Constraints to a Specified CPLEX Problem Object*


---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXnewrows. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
newRowsCPLEX(env, lp,
              nrows, rhs = NULL, sense = NULL,
              rngval = NULL, rnames = NULL)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nrows	Number of new rows.
rhs	Right hand side term for each new constraint.
sense	Sense of each new constraint (see IBM ILOG CPLEX documentation for possible values).
rngval	Range values for each new constraint.
rnames	Names for the new rows.

**Details**

Interface to the C function newRows which calls the CPLEX function CPXnewrows.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

objSaCplex	<i>Access Upper and Lower Sensitivity Ranges for Objective Function Coefficients</i>
------------	--

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXobjsa. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
objSaCplex(env, lp, begin, end)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCplex</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCplex</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Beginning of the range of ranges to be returned.
end	End of the range of ranges to be returned.

**Details**

Interface to the C function objSa which calls the CPLEX function CPXobjsa.

**Value**

If successful a list is returned:

lower	lower range values
upper	upper range values

otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

openEnvCPLEX	<i>Initialize a CPLEX Environment</i>
--------------	---------------------------------------

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXopenCPLEX. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
openEnvCPLEX(ptrtype = "cplex_env")
```

**Arguments**

ptrtype            A name for the pointer object.

**Details**

Interface to the C function openEnv which calls the CPLEX function CPXopenCPLEX.

**Value**

If successful, a pointer to the CPLEX environment is returned (an instance of class "cplexPtr"), otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[closeEnvCPLEX](#)

---

openFileCPLEX	<i>Open a File</i>
---------------	--------------------

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXfopen. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXfopen has been removed.

**Usage**

```
openFileCPLEX(fname, ftype = "w", ptrtype = "cplex_file")
```

**Arguments**

fname	Character string giving the file name to be opened.
ftype	Character string according to the syntax of the standard C function fopen.
ptrtype	A name for the pointer object.

**Details**

Interface to the C function cplexfopen which calls the CPLEX function CPXfopen.

**Value**

A pointer to the log file (an instance of class "[cplexPtr](#)") or NULL.

**Author(s)**

Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>  
Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[closeFileCPLEX](#), [fileputCPLEX](#)

---

openProbCPLEX                      *Create new CPLEX Environment And New CPLEX Problem Object*

---

### Description

The function openProbCPLEX creates a new CPLEX environment and a new CPLEX problem object.

### Usage

```
openProbCPLEX(pname = "CPLEX_PROB",
              ptrtypeENV = "cplex_env",
              ptrtypePROB = "cplex_prob")
```

### Arguments

pname	A single character string containing the name of the problem object.
ptrtypeENV	A name for the IBM ILOG CPLEX environment pointer object.
ptrtypePROB	A name for the IBM ILOG CPLEX problem pointer object.

### Details

Interface to the C functions openEnv and initProb calling CPLEX functions CPXopenCPLEX and CPXcreateprob.

### Value

env	A pointer to the CPLEX environment as returned by <a href="#">openEnvCPLEX</a> .
lp	A pointer to the CPLEX problem object as returned by <a href="#">initProbCPLEX</a> .

If openEnvCPLEX() fails, env will be of class "cplexError" and lp will be NULL. Each list element is an object of class "cplexPtr".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[closeProbCPLEX](#), [openEnvCPLEX](#), [initProbCPLEX](#)

---

`ordWriteCPLEX`*Write Priority Order to ORD File*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXordwrite`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
ordWriteCPLEX(env, lp, fname)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>fname</code>	Filename.

**Details**

Interface to the C function `ordWrite` which calls the CPLEX function `CPXordwrite`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#)

---

preslvWriteCPLEX      *Write a Presolved Version of the Problem to File*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXpreslvwrite. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
preslvWriteCPLEX(env, lp, fname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the file name to write to.

### Details

Interface to the C function preslvWrite which calls the CPLEX function CPXpreslvwrite.

### Value

If successful a dingle numeric value containing the objective value difference between the original problem and the presolved problem, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[readCopyProbCPLEX](#)

---

presolveCPLEX	<i>Perform Presolve</i>
---------------	-------------------------

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXpresolve. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
presolveCPLEX(env, lp, method)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
method	A single integer value specifying the optimization algorithm to be used to solve the problem after the presolve is completed.

### Details

Interface to the C function presolve which calls the CPLEX function CPXpresolve.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#) section "LP/QP solution algorithms".

---

primoptCPLEX

*Find a Solution to a Problem Using the Primal Simplex Method*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXprimopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
primoptCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function primopt which calls the CPLEX function CPXprimopt.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[solnInfoCPLEX](#), [getStatCPLEX](#), [solutionCPLEX](#)

---

printTerminateCPLEX     *Print Termination Signal*

---

**Description**

The function chgTerminateCPLEX prints termination signal.

**Usage**

```
printTerminateCPLEX(env)
```

**Arguments**

env                    An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

**Value**

NULL

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[setTerminateCPLEX](#), [delTerminateCPLEX](#), [chgTerminateCPLEX](#)

---

qpoptCPLEX                    *Find a Solution to a Continuous Quadratic Program*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXqpopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
qpoptCPLEX(env, lp)
```

**Arguments**

- env            An object of class "cplexPtr" as returned by `openEnvCPLEX`. This is basically a pointer to an IBM ILOG CPLEX environment.
- lp             An object of class "cplexPtr" as returned by `initProbCPLEX`. This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `qpopt` which calls the CPLEX function `CPXqpopt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`solnInfoCPLEX`, `getStatCPLEX`, `solutionCPLEX`

---

readCopyBaseCPLEX	<i>Read Basis From a BAS File and Copy it Into a CPLEX Problem Object</i>
-------------------	---

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXreadcopybase`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
readCopyBaseCPLEX(env, lp, fname)
```

**Arguments**

- env            An object of class "cplexPtr" as returned by `openEnvCPLEX`. This is basically a pointer to an IBM ILOG CPLEX environment.
- lp             An object of class "cplexPtr" as returned by `initProbCPLEX`. This is basically a pointer to an IBM ILOG CPLEX problem object.
- fname          Single character value giving the filename to read from.

**Details**

Interface to the C function readCopyBase which calls the CPLEX function CPXreadcopybase.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

readCopyMIPstartsCPLEX

*Read a File in the Format MST*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXreadcopymipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
readCopyMIPstartsCPLEX(env, lp, fname)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Name of the file to read from.s

**Details**

Interface to the C function readCopyMIPstarts which calls the CPLEX function CPXreadcopymipstarts.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

readCopyOrderCPLEX      *Read ORD File*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXreadcopyorder. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
readCopyOrderCPLEX(env, lp, fname)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the filename to read from.

**Details**

Interface to the C function readCopyOrder which calls the CPLEX function CPXreadcopyorder.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

readCopyParmCPLEX      *Reads Parameter Names And Settings From a File*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXreadcopyparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
readCopyParmCPLEX(env, fname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
fname	Filename.

### Details

Interface to the C function readCopyParm which calls the CPLEX function CPXreadcopyparam.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[cplexConstants](#)

---

readCopyProbCPLEX      *Read an MPS, LP, or SAV File Into an Existing CPLEX Problem Object*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXreadcopyprob. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
readCopyProbCPLEX(env, lp, fname, ftype = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the filename to read from.
ftype	Single character value giving the type of the file to read from.

### Details

Interface to the C function `readCopyProb` which calls the CPLEX function `CPXreadcopyprob`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

readCopySolCPLEX	<i>Reads a Solution From a SOL Format File</i>
------------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXreadcopyso1. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
readCopySolCPLEX(env, lp, fname)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the filename to read from.

### Details

Interface to the C function `readCopySol` which calls the CPLEX function `CPXreadcopyso1`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

refineConflictCPLEX     *Identify a Minimal Conflict for the Infeasibility of the Linear Constraints and the Variable Bounds*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXrefineconflict. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
refineConflictCPLEX(env, lp)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

### Details

Interface to the C function `refineConflict` which calls the CPLEX function `CPXrefineconflict`.

### Value

If successful a list is returned:

confnumrows     number of linear constraints in the conflict

confnumcols     number of variable bounds in the conflict

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getConflictCPLEX](#)

---

 refineConflictExtCPLEX

*Identify a Minimal Conflict*


---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXrefineconflicttext. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
refineConflictExtCPLEX(env, lp, grpcnt, concnt,
                      grppref, grpbeg, grpind, grptype)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
grpcnt	The number of constraint groups to be considered.
concnt	Length of arrays grpind and grptype.
grppref	Preferences for the groups.
grpbeg	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.
grpind	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.
grptype	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Details

Interface to the C function `refineConflictExt` which calls the CPLEX function `CPXrefineconflicttext`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

refineMIPstartConflictCPLEX

*Refine a Conflict in Order to Determine Why a Given MIP Start is Not Feasible*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXrefinemipstartconflict. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
refineMIPstartConflictCPLEX(env, lp, mipstartindex)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
mipstartindex	The index of the MIP start.

### Details

Interface to the C function `refineMIPstartConflict` which calls the CPLEX function `CPXrefinemipstartconflict`.

### Value

If successful a list is returned:

confnumrows	number of linear constraints in the conflict
confnumcols	number of variable bounds in the conflict

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getConflictCPLEX](#)

---

refineMIPstartConflictExtCPLEX  
*Identify a Minimal Conflict*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXrefinemipstartconflictext. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
refineMIPstartConflictExtCPLEX(env, lp, mipstartindex, grpcnt, concnt,
                               grppref, grpbeg, grpind, grptype)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
mipstartindex	The index of the MIP start.
grpcnt	The number of constraint groups to be considered.
concnt	Length of arrays grpind and grptype.
grppref	Preferences for the groups.
grpbeg	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.
grpind	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.
grptype	The constraint indices. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Details**

Interface to the C function `refineMIPstartConflictExt` which calls the CPLEX function `CPXrefinemipstartconflictext`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

return_codeCPLEX	<i>Translates a IBM ILOG CPLEX Return Code into a Human Readable String</i>
------------------	---

---

## Description

Translates a IBM ILOG CPLEX return code into a human readable string.

## Usage

```
return_codeCPLEX(code)
```

## Arguments

code	Return (error) code from IBM ILOG CPLEX.
------	--

## Value

An error message string corresponding to an return (error) code.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

## See Also

[cplexConstants](#)

---

rhsSaCplex	<i>Access Upper and Lower Sensitivity Ranges for Righthand Side Values of a Range of Constraints</i>
------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXrhssa. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
rhsSaCplex(env, lp, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCplex</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCplex</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
begin	Beginning of the range of ranges to be returned.
end	End of the range of ranges to be returned.

### Details

Interface to the C function rhsSa which calls the CPLEX function CPXrhssa.

### Value

If successful a list is returned:

lower	righthand side lower range values
upper	righthand side upper range values

otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

setDbiParamCPLEX      *Set the Value of a CPLEX Parameter of Type Double*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXsetdblparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
setDbiParamCPLEX(env, parm, value)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.
value	The new value of the parameter.

**Details**

Interface to the C function setDbiParam which calls the CPLEX function CPXsetdblparam.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#)

---

setDefaultParmCPLEX     *Reset All CPLEX Parameters And Settings to Default Values*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetdefaults. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
setDefaultParmCPLEX(env)
```

### Arguments

env                    An object of class "cplexPtr" as returned by [openEnvCPLEX](#). This is basically a pointer to an IBM ILOG CPLEX environment.

### Details

Interface to the C function setDefaultParm which calls the CPLEX function CPXsetdefaults.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

setIntParmCPLEX      *Set the Value of a CPLEX Parameter of Type CPXINT*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetintparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
setIntParmCPLEX(env, parm, value)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.
value	The new value of the parameter (integer value).

### Details

Interface to the C function setIntParm which calls the CPLEX function CPXsetintparam.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

setLogFileCPLEX	<i>Modifies the log file to which Messages are Written</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetlogfile. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality from IBM ILOG CPLEX >= 12.9.0 on, where CPXsetlogfile has been removed.

### Usage

```
setLogFileCPLEX(env, cpfile = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
cpfile	A pointer to a file as returned by <a href="#">openFileCPLEX</a> .

### Details

Interface to the C function getLogFile which calls the CPLEX function CPXgetlogfile.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[getLogFileCPLEX](#)

---

setLogFileNameCPLEX    *Set and open a log file*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetlogfile. Consult the IBM ILOG CPLEX documentation for more detailed information. This function has no functionality for IBM ILOG CPLEX < 12.8.0, where CPXsetlogfile was not included.

### Usage

```
setLogFileNameCPLEX(env, filename = "cpx.log", mode = "w")
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
filename	The name of the log file to open.
mode	The mode in which CPLEX should open the file. The specification is the same as that for the C library function fopen. For example, use a quoted character, such as "w" to write or "a" to append. Make sure you open the file for writing; otherwise, CPLEX writes nothing to the log file, and CPLEX can produce an error every time it attempts to write. If filename is NULL, then this argument is ignored and can be NULL, too.

### Details

Interface to the C function setLogFileName which calls the CPLEX function CPXsetlogfile.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

Mayo Roettger <mayo.roettger@hhu.de>

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

setLongParmCPLEX	<i>Set the Value of a Parameter of Type CPXLONG</i>
------------------	---

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXsetlongparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
setLongParmCPLEX(env, parm, value)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.
value	New value for the parameter.

**Details**

Interface to the C function setLongParm which calls the CPLEX function CPXsetlongparam.

**Value**

Zero if successful, otherwise nonzero.

**Note**

In order to transfer a 64 bit integer value to CPXsetlongparam, datatype numeric is used. Parameter value is a numeric value.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[setIntParmCPLEX](#), [cplexConstants](#)

---

`setObjDirCPLEX`*Change the Sense of the Optimization for a Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXchgobjsen. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
setObjDirCPLEX(env, lp, lpdire)
```

**Arguments**

<code>env</code>	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>lpdire</code>	A single integer value specifying the sense of the problem.

**Details**

Interface to the C function `setObjDir` which calls the CPLEX function `CPXchgobjsen`.

**Value**

NULL

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`cplexConstants` section "Generic constants".

---

setStrParmCPLEX	<i>Set the Value of a CPLEX String Parameter</i>
-----------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetstrparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
setStrParmCPLEX(env, parm, value)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
parm	Constant or reference number of the desired parameter.
value	The new value of the parameter (character value).

### Details

Interface to the C function setStrParm which calls the CPLEX function CPXsetstrparam.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>  
Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

### See Also

[cplexConstants](#)

---

setTerminateCPLEX      *Release Termination Signal*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXsetterminate with argument terminate\_p set to NULL. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
setTerminateCPLEX(env, ptrtype = "cplex_term")
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
ptrtype	A name for the pointer object.

### Details

Interface to the C function delTerminate which calls the CPLEX function CPXsetterminate with argument terminate\_p set to NULL.

### Value

If successful, a pointer to a termination signal is returned, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

### See Also

[delTerminateCPLEX](#), [printTerminateCPLEX](#), [chgTerminateCPLEX](#)

---

siftoptCPLEX	<i>Solve a Reduced Model</i>
--------------	------------------------------

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXsiftopt. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
siftoptCPLEX(env, lp)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `siftopt` which calls the CPLEX function `CPXsiftopt`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

solnInfoCPLEX                      *Access Solution Information*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXsolninfo. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
solnInfoCPLEX(env, lp)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `solnInfo` which calls the CPLEX function `CPXsolninfo`.

**Value**

If successful a list is returned:

method	Integer value specifying the method to produce the current solution.
type	Integer value specifying the type of current solution.
primal_feasible	Integer value specifying if the current solution is known to be primal feasible.
dual_feasible	Integer value specifying if the current solution is known to be dual feasible.

otherwise an instance of class "cplexError".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`cplexConstants`, `solutionCPLEX`

---

solutionCPLEX	<i>Access Solution Values Produced by Optimization Routines</i>
---------------	---

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXsolution. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
solutionCPLEX(env, lp)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

**Details**

Interface to the C function `solution` which calls the CPLEX function CPXsolution.

**Value**

If successful a list is returned:

lpstat	result of the optimization
objval	objective function value
x	values of the variables for the problem
pi	values of the dual variables
slack	values of the slack or surplus variables
dj	values of the reduced costs

otherwise an instance of class "[cplexError](#)".

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[cplexConstants](#), [solnInfoCPLEX](#)

---

`solWriteCPLEX`*Write a Solution File*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXsolwrite`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
solWriteCPLEX(env, lp, fname)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>lp</code>	An object of class " <code>cplexPtr</code> " as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
<code>fname</code>	Single character value giving the filename to write to.

**Details**

Interface to the C function `solWrite` which calls the CPLEX function `CPXsolwrite`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

`getProbTypeCPLEX`, `cplexConstants` section "Problem Types".

---

status_codeCPLEX	<i>Translates an IBM ILOG CPLEX Status Value into a Human Readable String</i>
------------------	---

---

## Description

Translates a IBM ILOG CPLEX status code into a human readable string.

## Usage

```
status_codeCPLEX(env, code)
```

## Arguments

env	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
code	Status code from IBM ILOG CPLEX as returned by <code>getStatCPLEX</code> .

## Value

A character string orresponding to the value of an IBM ILOG CPLEX status code as returned by `getStatCPLEX`.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

## See Also

`cplexConstants`, `getStatStrCPLEX`

---

tightenBndsCPLEX      *Change the Lower or Upper Bounds on a Set of Variables of a Problem*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function CPXtightenbds. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
tightenBndsCPLEX(env, lp, ncols, ind, lu, bd)
```

**Arguments**

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
ncols	Number of bounds to be changed.
ind	Indices of bounds to be changed.
lu	A character vector, specifying whether an entry in bd is a upper or a lower bound on variable ind[j].
bd	Values of the lower or upper bounds of the variables present in ind.

**Details**

Interface to the C function tightenBnds which calls the CPLEX function CPXtightenbds.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

**See Also**

[chgBndsCPLEX](#)

---

tuneParmCPLEX	<i>Tune Parameters of the Environment For Improved Optimizer Performance</i>
---------------	--

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXtuneparam. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
tuneParmCPLEX(env, lp,
              nIntP = 0, intP = NULL, intPv = NULL,
              nDb1P = 0, db1P = NULL, db1Pv = NULL,
              nStrP = 0, strP = NULL, strPv = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
nIntP	Number of integer parameters to be fixed during tuning.
intP	Parameter numbers of the integer parameters which remain fixed.
intPv	Values for the parameters listed in intP.
nDb1P	Number of double parameters to be fixed during tuning.
db1P	Parameter numbers of the double parameters which remain fixed.
db1Pv	Values for the parameters listed in db1P.
nStrP	Number of string parameters to be fixed during tuning.
strP	Parameter numbers of the string parameters which remain fixed.
strPv	Values for the parameters listed in strP.

### Details

Interface to the C function tuneParam which calls the CPLEX function CPXtuneparam.

### Value

Zero if successful, otherwise an instance of class "cplexError".

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

unscaleProbCPLEX      *Remove Any Scaling Applied to the Resident Problem*

---

## Description

Low level interface function to the IBM ILOG CPLEX function CPXunscaleprob. Consult the IBM ILOG CPLEX documentation for more detailed information.

## Usage

```
unscaleProbCPLEX(env, lp)
```

## Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.

## Details

Interface to the C function `unscaleProb` which calls the CPLEX function `CPXunscaleprob`.

## Value

Zero if successful, otherwise nonzero.

## Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

## References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

writeMIPstartsCPLEX     *Write a Range of MIP Starts to a File in MST Format*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXwritemipstarts. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
writeMIPstartsCPLEX(env, lp, fname, begin, end)
```

### Arguments

env	An object of class "cplexPtr" as returned by <a href="#">openEnvCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <a href="#">initProbCPLEX</a> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Filename to write to.
begin	An integer specifying the beginning of the range of MIP starts to be written.
end	An integer specifying the end of the range of MIP starts to be written.

### Details

Interface to the C function `writemipstarts` which calls the CPLEX function `CPXwritemipstarts`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

---

`writeParmCPLEX`*Write Names and Current Settings of CPLEX Parameters to File*

---

**Description**

Low level interface function to the IBM ILOG CPLEX function `CPXwriteparam`. Consult the IBM ILOG CPLEX documentation for more detailed information.

**Usage**

```
writeParmCPLEX(env, fname)
```

**Arguments**

<code>env</code>	An object of class " <code>cplexPtr</code> " as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
<code>fname</code>	Filename.

**Details**

Interface to the C function `writeParm` which calls the CPLEX function `CPXwriteparam`.

**Value**

Zero if successful, otherwise nonzero.

**Author(s)**

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

**References**

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSA5P>.

**See Also**

[cplexConstants](#)

---

writeProbCPLEX                      *Write a CPLEX Problem Object to File*

---

### Description

Low level interface function to the IBM ILOG CPLEX function CPXwriteprob. Consult the IBM ILOG CPLEX documentation for more detailed information.

### Usage

```
writeProbCPLEX(env, lp, fname, ftype = NULL)
```

### Arguments

env	An object of class "cplexPtr" as returned by <code>openEnvCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX environment.
lp	An object of class "cplexPtr" as returned by <code>initProbCPLEX</code> . This is basically a pointer to an IBM ILOG CPLEX problem object.
fname	Single character value giving the file name to write to.
ftype	Single character value giving the type of the file to write to.

### Details

Interface to the C function `writeProb` which calls the CPLEX function `CPXwriteprob`.

### Value

Zero if successful, otherwise nonzero.

### Author(s)

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

Maintainer: Mayo Roettger <mayo.roettger@hhu.de>

### References

The IBM ILOG CPLEX home page at <https://www.ibm.com/support/knowledgecenter/SSSA5P>.

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