Package ‘BufferedMatrix’

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Title A matrix data storage object held in temporary files
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Depends R (>= 2.6.0), methods
Description A tabular style data object where most data is stored outside main memory. A buffer is used to speed up access to data.
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createBufferedMatrix.R init.R
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R topics documented:

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as.BufferedMatrix Check or Coerce object to BufferedMatrix

Description

‘as.BufferedMatrix’ will coerce the supplied object into a BufferedMatrix. ‘is.BufferedMatrix’ checks whether the supplied argument is a BufferedMatrix.

Usage

as.BufferedMatrix(x, bufferrows=1, buffercols=1, directory=getwd())
is.BufferedMatrix(x)
BufferedMatrix-class

Arguments

- **x**: an R object
- **bufferrows**: number of rows to be buffered if the row buffer is activated
- **buffercols**: number of columns to be buffered
- **directory**: path to directory where temporary files should be stored

Details

These functions are useful for converting between R matrix objects and BufferedMatrix objects.

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BufferedMatrix-class  Class BufferedMatrix

Description

This is a class representation of a buffered matrix (of numeric data). In this case data is primarily stored outside main memory in temporary files.

Objects from the Class

Objects can be created using the function `createBufferedMatrix`

Slots

- **rawBufferedMatrix**: a pointer to an external structure used to access and store the matrix data.
- **rownames**: rownames for the matrix.
- **colnames**: colnames for the matrix.

Methods

- **ncol** signature(object = "BufferedMatrix"): Returns the number of columns in the matrix
- **nrow** signature(object = "BufferedMatrix"): Returns the number of rows in the matrix
- **dim** signature(object = "BufferedMatrix"): Returns the dimensions of the matrix
- **buffer.dim** signature(object = "BufferedMatrix"): Returns the number of columns and the number of rows to be stored in the buffer
- **set.buffer.dim** signature(object = "BufferedMatrix"): Set the buffer size or resize it
- **[** signature(object = "BufferedMatrix"): matrix accessor
- **[<-** signature(object = "BufferedMatrix"): matrix replacer
- **show** signature(object = "BufferedMatrix"): prints basic information about the BufferedMatrix out to screen
- **is.RowMode** signature(object = "BufferedMatrix"): returns TRUE if the row buffer is active and FALSE otherwise.
is.ColMode signature(object = "BufferedMatrix"): returns TRUE if the row buffer is inactive and FALSE otherwise.

RowMode signature(object = "BufferedMatrix"): Activate the row buffer.

ColMode signature(object = "BufferedMatrix"): Deactivate the row buffer.

duplicate signature(object = "BufferedMatrix"): Make a copy of the BufferedMatrix

prefix signature(object = "BufferedMatrix"): return the initial part of the string used for temporary files

directory signature(object = "BufferedMatrix"): return the location where temporary files are stored

filenames signature(object = "BufferedMatrix"): return the fully pathed filenames for each column in the matrix

ewApply signature(object = "BufferedMatrix"): apply a function elementwise

exp signature(object = "BufferedMatrix"): Compute the exponential elementwise of the matrix

sqrt signature(object = "BufferedMatrix"): Compute the square-root elementwise of the matrix

pow signature(object = "BufferedMatrix"): Compute $x^{power}$ elementwise of the matrix

log signature(object = "BufferedMatrix"): Compute logarithm elementwise of the matrix

colMax signature(object = "BufferedMatrix"): Returns a vector containing maximums by column

rowMax signature(object = "BufferedMatrix"): Returns a vector containing maximums by row

colMeans signature(object = "BufferedMatrix"): Returns a vector containing means by column

rowMeans signature(object = "BufferedMatrix"): Returns a vector containing means by row

colMin signature(object = "BufferedMatrix"): Returns a vector containing minimums by column

rowMin signature(object = "BufferedMatrix"): Returns a vector containing minimums by row

colVars signature(object = "BufferedMatrix"): Returns a vector containing sample variances by column

rowVars signature(object = "BufferedMatrix"): Returns a vector containing sample variances by row

colSd signature(object = "BufferedMatrix"): Returns a vector containing sample standard deviations by column

rowSd signature(object = "BufferedMatrix"): Returns a vector containing sample standard deviations by row

colSums signature(object = "BufferedMatrix"): Returns a vector containing sum by column

rowSums signature(object = "BufferedMatrix"): Returns a vector containing sum by row

colMedians signature(object = "BufferedMatrix"): Returns a vector containing medians by column

rowMedians signature(object = "BufferedMatrix"): Returns a vector containing medians by row. Best only used when the matrix is in RowMode (otherwise it is extremely slow)
Max signature(object = "BufferedMatrix"): Returns the maximum of all elements in the matrix
Min signature(object = "BufferedMatrix"): Returns the minimum of all elements in the matrix
Var signature(object = "BufferedMatrix"): Returns the sample variance of all elements in the matrix
Sd signature(object = "BufferedMatrix"): Returns the sample standard deviations of all elements in the matrix
Sum signature(object = "BufferedMatrix"): Returns the sum of all elements in the matrix
mean signature(object = "BufferedMatrix"): Returns the mean of all elements in the matrix
colApply signature(object = "BufferedMatrix"): apply a function columnwise. Returns either a vector or BufferedMatrix.
rowApply signature(object = "BufferedMatrix"): apply a function row-wise. Returns either a vector or BufferedMatrix.
as.matrix signature(object = "BufferedMatrix"): coerce BufferedMatrix into a regular R matrix
subBufferedMatrix signature(object = "BufferedMatrix"): gets data from BufferedMatrix and returns it in another BufferedMatrix
rownames signature(object = "BufferedMatrix"): access the row names
colnames signature(object = "BufferedMatrix"): access the column names
rownames<- signature(object = "BufferedMatrix"): replace the row names
colnames<- signature(object = "BufferedMatrix"): replace the column names
dimnames signature(object = "BufferedMatrix"): Access the row and column names
dimnames signature(object = "BufferedMatrix"): Replace the row and column names
ReadOnlyMode signature(object = "BufferedMatrix"): Toggles the Read Only mode on and off
is.ReadOnlyMode signature(object = "BufferedMatrix"): Finds out if it is in Read Only Mode
memory.usage signature(object = "BufferedMatrix"): Give amount of RAM currently in use by BufferedMatrix object
disk.usage signature(object = "BufferedMatrix"): Give amount of disk space currently in use by BufferedMatrix object
as(matrix,BufferedMatrix): Coerce matrix to BufferedMatrix.
as(BufferedMatrix,matrix): Coerce the Buffered to matrix.
AddColumn: Add an additional column to the matrix. Will be all empty (set to 0)
MoveStorageDirectory: Move the temporary files used to store the matrix from one location to another

Author(s)

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createBufferedMatrix

Description

Creates a Buffered Matrix object

Usage

createBufferedMatrix(rows, cols=0, bufferrows=1, buffercols=1, prefix="BM", directory=getwd())

Arguments

- **rows**: Number of rows in the matrix
- **cols**: Initial number of columns in the matrix
- **bufferrows**: Number of rows to be buffered if the row buffer is activated
- **buffercols**: Number of columns to be buffered
- **prefix**: String to be used as start of name for any temporary files
- **directory**: Path to directory where temporary files should be stored

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